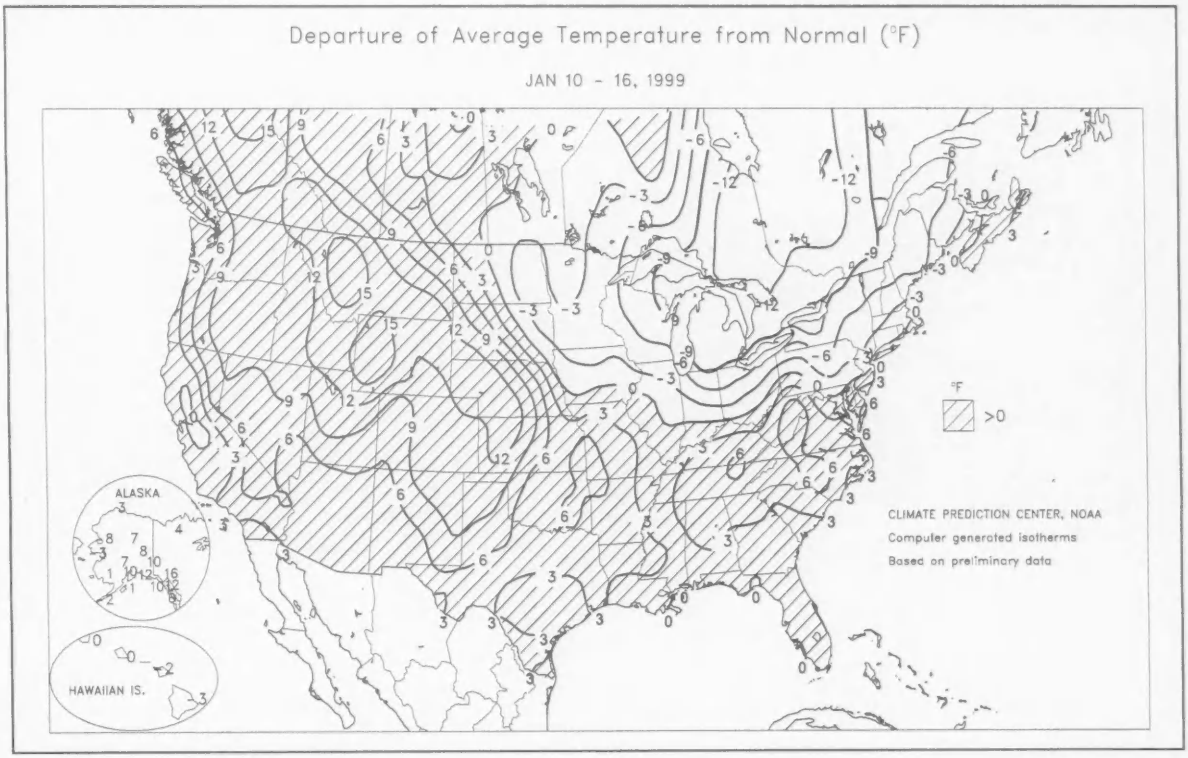
Volume 86, No. 3 January 20, 1999

WEEKLY WEATHER AND CROP BULLETIN

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service

U.S. DEPARTMENT OF AGRICULTURE
National Agricultural Statistics Service
and World Agricultural Outlook Board



HIGHLIGHTS

January 10 - 16, 1999

Warm weather continued across the **Intermountain West** and spread across the **Plains** and **Southeast**. On the **northern Plains**, mild, breezy conditions melted much of the snow cover, leaving winter wheat vulnerable to potential cold outbreaks. Farther west, fog lifted from **California's Central Valley**, allowing temperatures to return to near-normal levels. Toward week's end, bitterly cold conditions eased from the **Midwest** into the **Northeast**. Weekly temperatures ranged from 5 to 15°F above normal across most of the **western half of the Nation**, but averaged as much as 12°F below normal in **Michigan**. Light snow continued to blanket the **northern Corn Belt** for much of the

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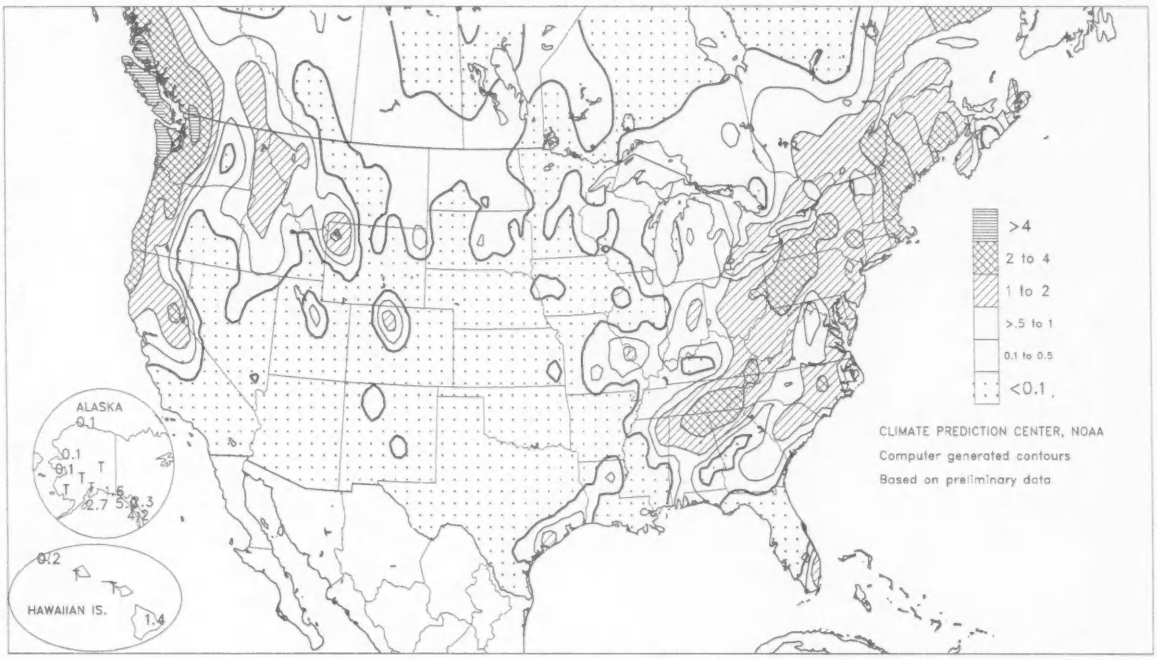
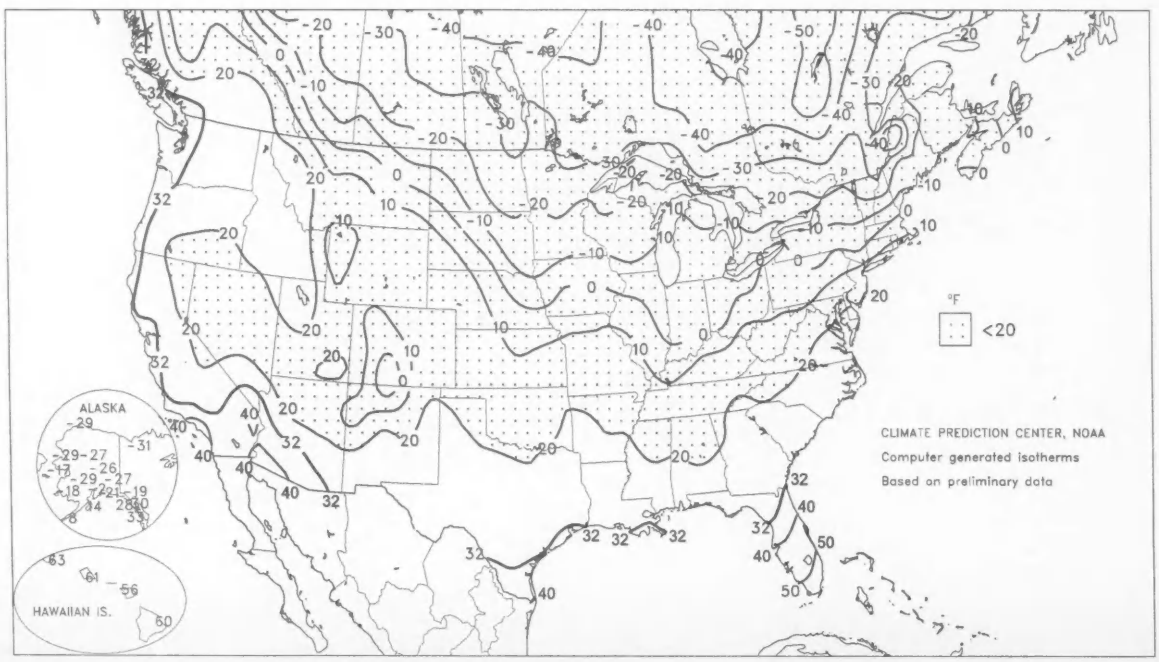
Total Precipitation (Inches)

JAN 10 - 16, 1999



Extreme Minimum Temperature (°F)

JAN 10 - 16, 1999



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week, adding to already impressive snow depths. Significant mid- to late-week snow, sleet, and freezing rain accumulated from the **eastern Corn Belt** into the **Northeast**, causing power outages and hampering transportation. Farther south, beneficial showers dampened areas east of the **Delta**, although soils remained unfavorably dry in much of **Florida**. Meanwhile, heavy rain returned to areas **west of the Cascades** during the week, maintaining wet conditions and causing some renewed flooding.

Early in the week, record warmth arrived in the **Northwest**, then spread quickly across the **Plains** and into the **Southeast**. On Sunday, **Eugene, OR** (60°F) posted a daily-record high. A day later, highs of 73°F in **Pueblo, CO** and 70°F in **Russell, KS** were among a half-dozen daily records. **San Angelo, TX** logged 79°F, a daily record, on Tuesday. Meanwhile, locally dense fog persisted through midweek in **California's Central Valley**, where Sunday's high reached only 37°F in **Stockton**. A second wave of warmth spread from the **Northwest** onto the **Plains** on January 14-15, producing about two dozen daily-record highs. **Yakima, WA** noted 60°F on Thursday. A day later, highs soared to77°F in **Lubbock, TX**, 74°F in **Clovis, NM**, and 65°F in **Grand Island, NE**.

Meanwhile across the **Midwest**, the lengthy spell of bitterly cold weather left considerable ice in the upper portion of the **middle Mississippi River** and its tributaries, including the **Illinois River**, restricting barge movement. In **Chicago, IL**, an additional 3.8 inches of snow fell during the week, boosting their monthly total to 28.9 inches. On Saturday, however, **Chicago's** temperature rose above 32°F for the first time since December 29, ending a 17-day span of sub-freezing temperatures. In **Grand Rapids, MI**, temperatures remained below 20°F on 8 consecutive days (January 7-14), breaking their former record--established in 1961, 1963, 1994, and 1996--by a day. In addition, **Grand Rapids'** weekly snowfall totaled 11.4 inches, increasing their month-to-date total to 40.5 inches and nearing their January-record value of 45.5 inches, set in 1979 and 1997. Similarly in **Wisconsin**, **Milwaukee's** January 1-16 snowfall of 35.5 inches placed as their third-highest January total behind 52.6 inches in 1918 and 51.2 inches in 1886. Snow also continued to accumulate in favored lake-effect regions, including **Buffalo, NY**. Through week's end, **Buffalo's** monthly snowfall reached 60.5 inches, approaching their record for any month (68.4 inches in December 1985). Nearly two-thirds of **Buffalo's** normal seasonal snow (91.1 inches) fell during the first half of January. By Friday morning, snow depths included 19 inches in **Chicago**, 24 inches in **Detroit, MI**, and 30 inches in **Buffalo**, the greatest there since February 1977.

Although milder weather overspread the **upper Midwest** toward week's end, severely cold conditions persisted in **New England**. On Thursday morning, lows included -34°F in **Berlin, NH**, -36°F in **Canaan, VT**, and -55°F in **Allagash, ME**. **Allagash's** reading set an all-time record for **Maine** (formerly -48°F in **Van Buren** on January 19, 1925) and all of **New England**. A shallow layer of Arctic air edged southward across the **Ohio Valley** and **Northeast**, creating a favorable environment for sleet and freezing rain. Some ice accumulated in the **eastern Corn Belt**, but more significant amounts glazed the **northern Mid-Atlantic States**. Snowfall topped 1 foot in portions of the **interior Northeast**. Meanwhile in the **Pacific Northwest**, rainfall returned after a dry start to January, perpetuating a 2½-month wet spell. South of the primary storm track, however, the water equivalent of **California's Sierra Nevada** snow pack stood at 9 inches (59 percent of normal) on January 15, according to **California's** Department of Water Resources. Despite this season's dryness, the storage of the State's 155 primary reservoirs was 127 percent of normal on December 31, 1998, up from 107 percent a year ago, the result of runoff from the exceptionally stormy 1997-98 wet season.

Selected 1998 Temperature and Precipitation Highlights

Highest Annual Average Temperature (°F)

Location	Avg.	Departure	Previous Record/Year(s)
Barrow, AK	17.1	+7.7	14.4 in 1940
LaCrosse, WI	51.7	+5.4	51.6 in 1931
Columbus, OH	56.3	+4.9	55.4 in 1931
Detroit, MI	53.5	+4.9	53.0 in 1931
Marquette, MI	43.4	+4.3	43.0 in 1987
Little Rock, AR	65.5	+4.2	64.8 in 1954
Philadelphia, PA	58.1	+3.8	58.1 in 1931, 1991
Harrisburg, PA	56.5	+3.6	not available
Oklahoma City, OK	63.2	+3.2	63.1 in 1939
Buffalo, NY	50.9	+3.2	not available
Huntsville, AL	63.4	+3.1	62.5 in 1991
Columbus, GA	67.7	+3.0	67.3 in 1990
Del Rio, TX	72.3	+2.9	71.7 in 1933
Dallas-Ft. Worth, TX	68.3	+2.9	68.2 in 1933
Atlantic City, NJ	55.9	+2.9	55.7 in 1990
New Orleans, LA	70.9	+2.8	70.4 in 1949
Allentown, PA	54.0	+2.8	53.9 in 1990, 1991
Central Park, NY	57.2	+2.5	57.2 in 1990, 1991
Austin, TX	70.8	+2.2	70.8 in 1933
Houston, TX	70.6	+2.2	70.4 in 1990

Greatest Number of Days with Highs at or Above 100°F

Location	Number of Days	Previous Record/Year
Del Rio, TX	69	68 in 1951
San Antonio, TX	36	33 in 1948
Tallahassee, FL	16	12 in 1931

Highest Annual Precipitation (Inches)

Location	Total	% of Normal	Previous Record/Year
Bakersfield, CA	13.30	233	11.17 in 1938
Winnemucca, NV	15.63	190	14.54 in 1945
Missoula, MT	21.81	162	21.39 in 1927
Aberdeen, SD	28.50	154	28.19 in 1944
Burlington, VT	50.42	146	50.16 in 1983
Milton, MA	71.00	145	69.36 in 1996

Lowest Annual Precipitation (Inches)

Location	Total	% of Normal	Previous Record/Year
Honolulu, HI	4.52	21	5.03 in 1983

National Weather Data for Selected Cities

Weather Data for the Week Ending January 16, 1999

Data Provided by Climate Prediction Center (301-763-8000 EXT. 7503)

STATES AND STATIONS		TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY, PERCENT		NUMBER OF DAYS			
																	TEMP. °F		PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE Dec 1	PCT. NORMAL SINCE Dec 1	TOTAL, IN., SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
AL	BIRMINGHAM	59	34	67	17	46	5	0.56	-0.61	0.56	9.16	117	2.89	107	88	44	0	3	1	1
	HUNTSVILLE	55	32	66	17	43	5	2.10	0.92	1.11	11.81	137	4.68	169	93	56	0	4	2	2
	MOBILE	63	38	70	23	50	1	0.09	-0.98	0.08	5.15	66	2.96	120	95	54	0	2	2	0
	MONTGOMERY	62	33	74	20	47	2	0.22	-0.83	0.10	2.81	37	0.79	33	91	43	0	4	3	0
AK	ANCHORAGE	30	18	38	-2	24	10	0.01	-0.17	0.00	1.49	97	0.02	5	93	66	0	7	1	0
	BARROW	-3	-18	5	-29	-10	3	0.05	0.02	0.03	0.54	284	0.06	100	86	71	0	7	3	0
	FAIRBANKS	8	-13	14	-26	-3	8	0.04	-0.07	0.03	0.57	51	0.06	21	87	74	0	7	1	0
	JUNEAU	37	34	40	30	36	12	2.26	1.21	1.00	11.06	162	5.55	232	97	85	0	2	7	1
	KODIAK	36	27	40	14	31	1	2.66	0.94	1.31	13.14	122	8.62	219	89	66	0	4	5	2
	NOME	11	-2	18	-17	5	-3	0.12	-0.07	0.05	1.18	91	0.14	32	75	57	0	7	4	0
AZ	FLAGSTAFF	51	18	56	13	34	6	0.00	-0.47	0.00	0.50	14	0.00	0	71	19	0	7	0	0
	PHOENIX	71	45	76	41	58	5	0.00	-0.15	0.00	0.68	50	0.00	0	53	16	0	0	0	0
	TUCSON	72	38	77	31	55	4	0.00	-0.20	0.00	0.45	29	0.00	0	39	12	0	1	0	0
	YUMA	73	46	75	42	59	3	0.00	-0.08	0.00	0.17	28	0.00	0	50	19	0	0	0	0
AR	FORT SMITH	56	27	65	20	42	5	0.00	-0.42	0.00	3.68	91	0.64	63	91	44	0	5	0	0
	LITTLE ROCK	57	29	70	19	43	4	0.00	-0.78	0.00	4.47	67	1.11	59	95	52	0	5	0	0
CA	BAKERSFIELD	57	32	63	23	44	-3	0.01	-0.18	0.01	0.61	59	0.06	15	99	50	0	5	1	0
	EUREKA	55	43	60	35	49	1	1.27	-0.12	0.73	6.67	72	1.27	40	93	85	0	0	5	1
	FRESNO	53	34	62	29	43	-2	0.00	-0.44	0.00	0.68	28	0.01	1	99	61	0	5	0	0
	LOS ANGELES	68	50	80	46	59	2	0.00	-0.54	0.00	0.70	25	0.04	3	82	41	0	0	0	0
	REDDING	56	36	69	28	46	1	0.52	-0.89	0.40	2.72	31	0.52	16	95	56	0	4	3	0
	SACRAMENTO	51	38	58	32	44	0	0.56	-0.29	0.40	1.22	28	0.57	30	100	73	0	1	3	0
	SAN DIEGO	65	50	74	46	57	0	0.00	-0.41	0.00	0.60	24	0.00	0	90	46	0	0	0	0
	SAN FRANCISCO	53	44	58	37	49	0	0.37	-0.64	0.19	1.35	25	0.37	16	95	73	0	0	3	0
CO	ALAMOSA	44	4	50	-2	24	10	0.00	-0.06	0.00	0.04	7	0.03	21	84	27	0	7	0	0
	CO SPRINGS	52	25	63	17	39	10	0.00	-0.06	0.00	0.22	35	0.07	44	65	19	0	5	0	0
	DENVER	52	27	62	19	40	10	0.00	-0.11	0.00	0.52	57	0.17	65	66	22	0	5	0	0
	GRAND JUNCTION	39	21	45	18	30	6	0.04	-0.10	0.04	0.31	33	0.05	16	87	50	0	7	1	0
	PUEBLO	60	23	73	12	42	12	0.00	-0.08	0.00	0.41	67	0.07	37	68	17	0	6	0	0
CT	BRIDGEPORT	36	19	50	10	27	-2	1.31	0.57	1.18	5.76	110	4.71	274	84	53	0	7	3	1
	HARTFORD	30	12	42	2	21	-3	0.41	-0.37	0.20	2.43	42	1.60	88	83	55	0	7	4	0
DC	WASHINGTON	43	28	57	20	36	1	1.03	0.42	0.79	4.34	95	2.59	180	77	45	0	5	3	1
DE	WILMINGTON	39	24	54	19	31	1	1.03	0.34	0.98	4.08	80	3.04	188	89	58	0	7	3	1
FL	DAYTONA BEACH	70	50	78	39	60	2	0.01	-0.60	0.01	2.65	67	1.29	94	92	56	0	0	1	0
	JACKSONVILLE	67	37	77	29	52	0	0.00	-0.73	0.00	1.46	34	1.04	64	97	45	0	3	0	0
	KEY WEST	74	64	79	57	69	0	0.67	0.20	0.37	3.25	108	1.65	156	91	68	0	0	4	0
	MIAMI	76	60	80	52	68	1	0.29	-0.16	0.28	3.95	138	1.97	193	88	56	0	0	2	0
	ORLANDO	73	52	80	42	62	3	0.00	-0.50	0.00	2.03	62	1.41	126	95	52	0	0	0	0
	PENSACOLA	60	42	68	26	51	1	0.88	-0.16	0.55	7.09	107	2.73	116	90	57	0	2	2	1
	TALLAHASSEE	65	32	72	25	49	-2	0.02	-1.05	0.01	3.59	48	1.91	78	96	38	0	4	2	0
	TAMPA	73	51	79	40	62	2	0.00	-0.42	0.00	2.57	83	1.66	174	94	47	0	0	0	0
	WEST PALM BEACH	74	58	79	52	66	1	1.45	0.82	0.79	9.48	243	5.57	392	96	58	0	0	4	1
GA	ATHENS	58	34	66	24	46	5	0.07	-0.98	0.06	3.44	53	1.59	67	84	36	0	4	2	0
	ATLANTA	56	34	66	20	45	5	0.44	-0.63	0.36	3.71	55	1.91	79	81	37	0	3	2	0
	AUGUSTA	62	29	72	23	46	2	1.22	0.31	0.74	3.48	64	2.11	103	96	32	0	6	2	1
	COLUMBUS	60	34	68	24	47	2	0.09	-0.95	0.09	2.53	34	0.94	39	88	35	0	4	1	0
	MACON	62	31	70	25	46	1	0.54	-0.48	0.52	3.74	58	2.22	95	94	33	0	5	2	1
	SAVANNAH	63	33	70	24	48	-1	0.37	-0.46	0.28	3.69	77	1.36	74	97	37	0	4	2	0
HI	HILO	76	62	78	60	69	-3	1.37	-0.86	0.55	11.90	69	1.59	30	96	65	0	0	7	1
	HONOLULU	80	65	83	61	73	0	0.04	-0.80	0.04	1.99	34	1.67	85	88	53	0	0	1	0
	KAHULUI	80	59	81	56	70	-2	0.01	-0.95	0.01	2.05	38	0.88	40	88	56	0	0	1	0
	LIHUE	76	66	77	63	71	0	0.16	-1.23	0.05	5.19	62	2.82	88	88	63	0	0	5	0
ID	BOISE	45	32	54	27	39	10	0.44	0.11	0.16	2.09	99	0.44	58	93	54	0	3	5	0
	LEWISTON	47	36	51	28	42	9	0.33	0.03	0.24	1.39	73	0.38	55	91	64	0	2	5	0
	POCATELLO	45	27	51	23	36	14	0.40	0.15	0.20	1.12	67	0.40	70	88	42	0	7	3	0
IL	CHICAGO/O'HARE	24	11	40	-3	17	-3	0.09	-0.26	0.00	1.34	40	0.15	17	92	70	0	7	3	0
	MOLINE	24	11	38	-1	17	-2	0.32	-0.05	0.28	1.60	51	0.42	47	90	72	0	7	2	0
	PEORIA	29	14	42	3	21	0	0.02	-0.33	0.02	2.17	66	0.41	47	88	67	0	7	1	0
	ROCKFORD	20	7	37	-5	13	-5	0.10	-0.20	0.00	1.04	37	0.13	18	92	71	0	7	2	0
	SPRINGFIELD	32	18	40	7	25	1	0.06	-0.28	0.05	1.14	32	0.50	57	90	67	0	7	2	0
IN	EVANSVILLE	42	23	54	7	32	2	0.39	-0.20	0.39	4.85	95	1.37	98	90	71	0	5	1	0
	FORT WAYNE	26	6	38	-14	16	-6	0.14	-0.29	0.09	1.54	39	0.44	42	91	73	0	7	3	0
	INDIANAPOLIS	32	13	42	-9	23	-3	0.58	0.05	0.41	2.19	47	1.18	92	90	71	0	6	4	0
	SOUTH BEND	22	8	39	-8	15	-8	0.18	-0.34	0.07	3.02	66	0.99	79	89	67	0	7	5	0
IA	BURLINGTON	30	16	43	8	23	1	0.03	-0.26	0.03	1.94	72	0.29	41	83	65	0	7	1	0
	CEDAR RAPIDS	23	12	38	-1	17	0	0.00	-0.23	0.00	0.56	26	0.07	12	87	67	0	7	0	0
	DES MOINES	28	11	43	4	20	1	0.03	-0.19	0.01	0.46	24	0.05	10	90	69	0	7	2	0
	DUBUQUE	18	6	36	-5	12	-4	0.02	-0.27	0.02	0.37	14	0.22	31	90	71	0	7	1	0
	SIOUX CITY	27	6	41	-9	17	-1	0.03	-0.10	0.03	0.20	19	0.07	23	88	71	0	7	1	0
	WATERLOO	21	5	37	-9	13	-1	0.03	-0.15	0.02	0.54	31	0.25	57	91	70	0	7	2	0
KS	CONCORDIA	48	22	62	7	35	9	0.02	-0.12	0.00	0.26	22	0.16	50	83	39	0	6	1	0
	DODGE CITY	57	25	69	15	41	11	0.06	-0.05	0.05	0.40	44	0.11	44	81	31	0	7	1	0
	GOODLAND	56	21	69	14	39	10	0.04	-0.04	0.00	0.17	28	0.05	25	74	24	0	7	1	0
	TOPEKA	43	19	52	11	31	4	0.00	-0.22	0.00	1.44	73	0.23	43	88	49	0	7	0	0

Based on 1961-90 normals

Weather Data for the Week Ending January 16, 1999

STATES AND STATIONS		TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY, PERCENT		NUMBER OF DAYS			
																	TEMP. °F		PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE Dec 1	PCT. NORMAL SINCE Dec 1	TOTAL, IN., SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	WICHITA	48	22	56	13	35	6	0.02	-0.16	0.02	1.10	67	0.04	9	88	46	0	7	1	0
KY	JACKSON	46	30	56	14	38	5	0.84	-0.01	0.59	9.13	143	3.96	198	90	56	0	5	3	1
	LEXINGTON	42	25	53	13	33	3	0.39	-0.26	0.31	6.26	113	3.03	194	92	66	0	6	2	0
	LOUISVILLE	44	26	56	9	34	3	0.50	-0.14	0.41	7.04	136	3.78	249	90	64	0	5	3	0
	PADUCAH	44	24	58	10	34	2	0.13	-0.60	0.13	5.36	83	1.65	94	92	69	0	6	1	0
LA	BATON ROUGE	65	39	75	26	52	3	0.03	-1.07	0.03	6.58	81	3.00	118	92	44	0	2	1	0
	LAKE CHARLES	64	41	74	29	53	2	0.29	-0.75	0.29	8.36	111	4.74	194	98	60	0	2	1	0
	NEW ORLEANS	64	41	76	30	53	2	0.08	-1.05	0.00	4.74	57	2.48	95	90	55	0	2	2	0
	SHREVEPORT	61	34	71	24	48	3	0.01	-0.87	0.01	8.44	138	2.20	109	94	48	0	4	1	0
ME	CARIBOU	16	-9	42	-21	4	-5	1.06	0.50	0.85	3.86	84	2.28	169	90	65	0	7	6	1
	PORTLAND	27	6	46	-6	17	-4	1.04	0.23	0.75	3.63	56	2.07	108	86	47	0	7	4	1
MD	BALTIMORE	41	22	58	14	32	0	0.74	0.05	0.53	4.24	85	2.97	186	86	49	0	6	3	1
MA	BOSTON	35	18	47	4	26	-3	1.65	0.84	1.30	5.35	91	3.76	200	88	55	0	7	4	1
	WORCESTER	32	11	47	2	21	-1	1.67	0.83	1.44	4.91	82	3.45	178	84	57	0	7	4	1
MI	ALPENA	16	0	38	-14	8	-10	0.43	0.05	0.24	2.31	79	0.90	99	90	67	0	7	7	0
	GRAND RAPIDS	17	5	37	-2	11	-11	0.18	-0.27	0.08	1.91	49	0.70	66	88	72	0	7	5	0
	HOUGHTON LAKE	14	1	36	-11	8	-9	0.34	-0.01	0.22	2.00	72	0.97	115	91	67	0	7	6	0
	LANSING	16	3	39	-10	10	-11	0.20	-0.14	0.07	1.89	59	0.72	85	89	69	0	7	4	0
	MARQUETTE	10	-12	35	-26	-1	-12	0.09	-0.41	0.06	2.50	66	0.90	76	89	49	0	7	2	0
	MUSKEGON	19	5	38	-6	12	-11	0.15	-0.41	0.07	1.93	44	0.61	46	91	65	0	7	5	0
MN	DULUTH	10	-8	39	-21	2	-5	0.03	-0.26	0.02	1.73	89	0.15	22	86	62	0	7	2	0
	INT'L FALLS	7	-14	34	-36	-3	-4	0.13	-0.07	0.05	0.58	44	0.21	44	86	62	0	7	4	0
	MINNEAPOLIS	15	0	38	-9	8	-4	0.10	-0.12	0.02	0.71	45	0.26	52	84	63	0	7	5	0
	ROCHESTER	15	0	34	-10	8	-3	0.12	-0.06	0.04	0.51	35	0.22	51	90	75	0	7	5	0
	ST. CLOUD	12	-8	35	-21	2	-5	0.27	0.10	0.11	1.36	111	0.46	118	84	65	0	7	5	0
MS	JACKSON	61	36	74	22	48	5	0.15	-1.05	0.13	8.81	101	2.58	91	95	47	0	3	2	0
	MERIDIAN	60	32	72	20	46	2	0.02	-1.15	0.02	4.91	56	0.92	34	94	47	0	4	1	0
	TUPELO	55	33	71	17	44	5	1.67	0.55	1.10	13.12	149	4.93	185	92	57	0	5	2	2
MO	COLUMBIA	38	20	50	10	29	2	0.02	-0.30	0.02	1.81	55	0.59	74	89	64	0	6	1	0
	KANSAS CITY	40	20	54	13	30	5	0.07	-0.18	0.05	1.30	59	0.19	31	88	59	0	6	2	0
	SAINT LOUIS	38	23	50	14	31	2	0.25	-0.16	0.23	2.47	61	1.64	162	93	72	0	5	2	0
	SPRINGFIELD	47	25	56	15	36	5	0.45	0.05	0.25	3.30	79	1.95	193	96	64	0	6	2	0
MT	BILLINGS	45	30	49	17	37	15	0.03	-0.19	0.03	1.07	84	0.48	98	85	45	0	5	1	0
	BUTTE	41	27	47	20	34	18	0.17	0.03	0.09	1.33	171	0.23	74	79	48	0	5	3	0
	GLASGOW	28	8	47	-5	18	8	0.33	0.25	0.10	1.28	229	0.68	358	88	71	0	7	5	0
	GREAT FALLS	46	28	52	6	37	16	0.01	-0.21	0.00	0.41	30	0.19	38	73	38	0	5	1	0
	KALISPELL	41	28	45	19	34	14	0.34	-0.02	0.14	2.93	114	0.93	109	92	62	0	6	5	0
	MILES CITY	37	18	46	8	28	12	0.12	-0.02	0.11	1.12	120	0.54	174	92	64	0	7	2	0
	MISSOULA	41	30	48	28	36	13	0.26	-0.04	0.08	1.81	98	0.54	78	96	61	0	7	6	0
NE	GRAND ISLAND	44	17	65	3	31	9	0.00	-0.11	0.00	0.33	34	0.22	88	88	51	0	7	0	0
	LINCOLN	38	11	52	0	24	3	0.00	-0.12	0.00	0.41	35	0.22	73	91	57	0	7	0	0
	NORFOLK	38	11	52	-4	24	6	0.02	-0.09	0.00	0.33	33	0.21	78	87	57	0	7	1	0
	NORTH PLATTE	51	19	64	13	35	14	0.00	-0.08	0.00	0.43	66	0.41	216	94	41	0	7	0	0
	OMAHA	33	11	47	-2	22	1	0.01	-0.18	0.00	0.40	28	0.28	68	90	62	0	7	1	0
	SCOTTSBLUFF	51	23	60	14	37	13	0.02	-0.09	0.02	0.90	108	0.04	16	75	31	0	6	1	0
	VALENTINE	46	15	58	6	30	11	0.00	-0.06	0.00	0.66	129	0.23	177	89	46	0	7	0	0
NV	ELY	50	19	56	14	34	10	0.00	-0.17	0.00	0.31	28	0.00	0	82	26	0	7	0	0
	LAS VEGAS	62	38	66	37	50	5	0.00	-0.11	0.00	0.04	6	0.00	0	45	20	0	0	0	0
	RENO	53	29	57	19	41	9	0.03	-0.22	0.03	0.07	5	0.03	5	93	36	0	5	1	0
	WINNEMUCCA	50	23	54	11	36	8	0.11	-0.06	0.09	0.53	41	0.11	27	91	40	0	5	2	0
NH	CONCORD	26	6	35	-2	16	-3	1.45	0.88	0.91	4.04	90	3.19	240	90	55	0	7	5	1
NJ	NEWARK	37	21	51	12	29	-2	1.41	0.64	1.04	5.83	112	4.80	270	77	52	0	7	3	1
NM	ALBUQUERQUE	53	27	59	22	40	7	0.00	-0.11	0.00	0.22	30	0.00	0	67	24	0	6	0	0
NY	ALBANY	24	5	34	-9	15	-6	0.76	0.22	0.43	2.96	70	1.92	151	92	61	0	7	6	0
	BINGHAMTON	27	6	35	-2	17	-5	1.35	0.80	0.55	4.60	107	3.01	232	93	71	0	7	5	2
	BUFFALO	23	9	37	1	16	-8	1.71	1.09	0.45	6.10	118	4.54	303	91	68	0	7	6	0
	ROCHESTER	23	7	39	-2	15	-9	1.39	0.92	0.51	4.41	115	2.81	251	89	66	0	7	6	1
	SYRACUSE	24	5	42	-7	15	-8	2.53	1.99	1.35	5.80	129	4.07	318	88	59	0	7	5	2
NC	ASHEVILLE	51	29	60	18	40	4	0.73	0.01	0.69	5.43	105	2.39	145	87	45	0	5	2	1
	CHARLOTTE	57	32	68	22	45	5	0.33	-0.50	0.25	5.08	95	1.81	96	77	33	0	4	2	0
	GREENSBORO	53	31	62	20	42	5	0.40	-0.32	0.29	7.59	151	2.37	144	77	35	0	4	2	0
	HATTERAS	57	41	67	30	49	4	0.80	-0.41	0.71	7.79	107	3.06	111	87	58	0	2	3	1
	RALEIGH	58	32	67	24	45	7	1.04	0.26	0.52	6.42	128	2.98	168	79	37	0	4	2	2
	WILMINGTON	61	35	71	29	48	3	0.98	0.08	0.51	6.69	119	2.73	136	91	42	0	3	3	1
ND	BISMARCK	20	-1	44	-17	10	1	0.29	0.18	0.14	0.94	127	0.69	276	87	68	0	7	4	0
	DICKINSON	29	8	43	-4	19	6	0.14	0.06	0.05	0.55	98	0.37	195	89	70	0	7	4	0
	FARGO	12	-8	38	-22	3	-2	0.06	-0.12	0.00	0.43	42	0.12	32	86	67	0	7	2	0
	GRAND FORKS	9	-10	37	-29	0	-4	0.19	0.02	0.09	0.56	55	0.31	82	86	69	0	7	3	0
	JAMESTOWN	11	-9	42	-27	1	-6	0.26	0.12	0.13	0.67	83	0.47	152	87	70	0	7	4	0
	WILLISTON	20	4	42	-8	12	3	0.45	0.33	0.27	1.56	175	0.81	270	87	71	0	7	4	0
OH	AKRON-CANTON	29	12	40	-2	21	-4	1.46	0.97	0.70	4.88	118	2.73	231	96	82	0	7	6	1
	CINCINNATI	38	18	52	-2	28	0	0.56	-0.03	0.51	6.37	140	2.53	183	91	67	0	6	4	1
	CLEVELAND	28	12	39	-1	20	-4	0.89	0.43	0.47	4.83	115	2.91	258	94	75	0	7	6	0
	COLUMBUS	34	16	45	3	25	-1	0.69	0.19	0.47	5.30	131	2.06	175	91	72	0	6	5	0

Based on 1961-90 normals

Weather Data for the Week Ending January 16, 1999

STATES AND STATIONS		TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY, PERCENT		NUMBER OF DAYS			
																	TEMP. °F		PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE Dec 1	PCT. NORMAL SINCE Dec 1	TOTAL, IN., SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	TOLEDO	23	7	39	-6	15	-7	0.41	0.01	0.13	1.92	49	1.32	132	90	68	0	7	5	0
	YOUNGSTOWN	29	12	39	-1	20	-3	1.75	1.26	0.63	5.96	145	3.61	306	95	79	0	7	6	2
OK	OKLAHOMA CITY	55	27	64	20	41	5	0.00	-0.25	0.00	1.69	86	0.07	12	84	37	0	6	0	0
	TULSA	53	28	64	21	40	5	0.00	-0.34	0.00	1.90	84	0.33	61	85	44	0	6	0	0
OR	ASTORIA	50	37	53	32	44	2	3.21	0.90	1.38	20.43	128	3.90	72	98	75	0	1	7	1
	BURNS	40	25	48	18	32	10	0.38	0.16	0.14	1.56	92	0.41	76	98	64	0	6	4	0
	EUGENE	52	39	59	31	46	5	1.94	0.10	1.01	10.52	81	1.99	46	97	72	0	2	5	1
	MEDFORD	49	34	55	22	42	4	0.48	-0.15	0.28	1.71	36	0.48	32	98	61	0	3	2	0
	PENDLETON	51	38	58	33	44	11	0.36	0.00	0.16	1.74	71	0.37	45	91	53	0	0	4	0
	PORTLAND	49	41	53	36	45	6	1.39	0.15	0.39	8.30	92	1.56	53	98	78	0	0	7	0
	SALEM	50	39	53	31	45	5	2.23	0.86	0.64	11.03	110	2.24	69	99	77	0	1	6	3
PA	ALLENTOWN	32	16	45	7	24	-3	0.35	-0.37	0.25	3.47	67	2.83	169	83	58	0	7	2	0
	ERIE	29	12	39	7	21	-5	1.04	0.53	0.91	4.79	99	1.20	97	91	69	0	7	6	1
	MIDDLETOWN	32	17	41	14	25	-4	1.03	0.40	0.85	3.51	74	3.20	216	84	56	0	7	3	1
	PHILADELPHIA	39	23	54	20	31	1	1.01	0.27	0.87	3.87	76	3.06	179	90	57	0	7	3	1
	PITTSBURGH	36	17	47	3	27	1	1.83	1.25	1.17	5.48	129	3.68	271	96	69	0	6	6	1
	WILKES-BARRE	32	13	50	10	23	-2	0.92	0.45	0.43	3.58	99	2.72	245	87	57	0	7	4	0
	WILLIAMSPORT	27	12	34	2	19	-6	0.94	0.36	0.59	2.59	59	1.71	129	92	64	0	7	5	1
RI	PROVIDENCE	37	18	49	9	27	-1	1.43	0.54	1.06	5.22	81	3.96	191	91	52	0	7	4	1
SC	BEAUFORT	62	36	68	32	49	1	0.05	-0.80	0.03	4.63	90	1.35	70	96	40	0	2	2	0
	CHARLESTON	63	36	72	29	50	2	0.13	-0.66	0.04	5.74	116	1.40	79	94	34	0	3	2	0
	COLUMBIA	61	33	71	22	47	4	0.73	-0.28	0.55	3.91	87	1.62	72	87	29	0	4	3	1
	GREENVILLE	55	32	65	21	44	4	0.35	-0.56	0.34	6.26	100	2.02	96	84	38	0	4	2	0
SD	ABERDEEN	19	-3	42	-17	8	-1	0.19	0.11	0.08	0.75	127	0.55	289	88	69	0	7	4	0
	HURON	23	1	41	-17	12	-1	0.19	0.11	0.11	0.46	71	0.25	132	87	68	0	7	3	0
	RAPID CITY	47	19	59	13	33	11	0.04	-0.04	0.00	0.30	44	0.24	126	93	42	0	7	1	0
	SIOUX FALLS	21	1	38	-16	11	-2	0.08	-0.03	0.02	0.57	58	0.33	122	88	68	0	7	3	0
TN	BRISTOL	47	28	56	18	38	3	1.21	0.49	1.13	7.61	150	2.38	143	93	53	0	6	2	1
	CHATTANOOGA	54	31	63	18	42	5	2.67	1.56	2.27	10.50	135	4.19	163	91	47	0	5	2	1
	KNOXVILLE	50	32	59	18	41	5	1.43	0.48	1.31	9.40	139	3.46	157	87	52	0	4	2	1
	MEMPHIS	51	32	65	15	41	2	0.00	-0.84	0.00	6.61	86	2.36	116	90	55	0	4	0	0
	NASHVILLE	49	30	61	15	40	4	0.26	-0.55	0.22	9.61	147	3.22	167	87	53	0	4	2	0
TX	ABILENE	63	33	74	22	48	6	0.00	-0.22	0.00	1.40	92	0.03	6	72	24	0	4	0	0
	AMARILLO	62	28	75	19	45	10	0.00	-0.11	0.00	0.47	71	0.06	24	74	20	0	5	0	0
	AUSTIN	66	38	73	27	52	4	0.00	-0.38	0.00	1.58	58	0.02	2	95	42	0	2	0	0
	BEAUMONT	66	43	76	30	54	4	0.27	-0.84	0.20	5.22	71	2.42	95	98	58	0	1	2	0
	BROWNSVILLE	74	49	80	41	62	2	0.01	-0.35	0.01	0.56	27	0.27	33	93	49	0	0	1	0
	CORPUS CHRISTI	69	44	78	32	57	2	0.01	-0.36	0.01	1.19	57	0.46	57	94	56	0	1	1	0
	DEL RIO	69	35	78	27	52	2	0.00	-0.11	0.00	0.20	23	0.01	4	87	33	0	3	0	0
	EL PASO	62	33	67	24	47	5	0.00	-0.08	0.00	0.34	42	0.00	0	58	22	0	3	0	0
	FORT WORTH	61	34	70	22	48	4	0.00	-0.41	0.00	4.44	159	0.01	1	91	46	0	3	0	0
	GALVESTON	63	49	71	38	56	3	0.01	-0.75	0.01	5.37	102	1.68	94	94	71	0	0	1	0
	HOUSTON	66	39	78	29	53	3	0.25	-0.49	0.17	5.26	101	1.37	79	98	53	0	2	2	0
	LUBBOCK	64	28	77	22	46	7	0.00	-0.08	0.00	0.26	36	0.00	0	65	20	0	5	0	0
	MIDLAND	66	30	72	24	48	6	0.00	-0.08	0.00	0.58	76	0.00	0	62	18	0	5	0	0
	SAN ANGELO	65	31	79	22	48	5	0.00	-0.17	0.00	0.49	43	0.00	0	79	21	0	4	0	0
	SAN ANTONIO	67	36	72	24	51	2	0.00	-0.39	0.00	0.46	20	0.06	7	88	36	0	2	0	0
	VICTORIA	67	39	75	28	53	0	0.10	-0.40	0.01	3.78	119	0.19	17	98	56	0	2	2	0
	WACO	63	35	74	21	49	4	0.00	-0.36	0.00	4.08	153	0.00	0	91	46	0	3	0	0
	WICHITA FALLS	61	28	74	20	45	5	0.00	-0.22	0.00	1.93	107	0.00	0	81	29	0	3	0	0
UT	SALT LAKE CITY	48	31	51	25	39	12	0.08	-0.17	0.04	1.31	65	0.12	20	78	43	0	5	2	0
VT	BURLINGTON	21	-1	32	-22	10	-6	1.11	0.69	0.80	3.01	88	2.64	264	84	50	0	7	4	1
VA	LYNCHBURG	47	28	59	15	37	3	0.64	0.00	0.45	5.34	113	2.25	151	82	39	0	5	2	1
	NORFOLK	54	34	65	26	44	5	0.69	-0.16	0.63	6.56	127	1.23	63	87	53	0	3	2	1
	RICHMOND	51	30	64	21	41	5	0.73	-0.01	0.64	7.60	153	2.62	154	79	37	0	4	2	1
	ROANOKE	48	30	60	17	39	5	0.54	-0.04	0.30	3.66	85	1.35	101	76	40	0	5	2	0
	WASH/DULLES	43	23	59	15	33	3	0.69	0.08	0.47	4.31	93	2.78	194	81	49	0	6	3	0
WA	HANFORD	51	33	62	26	42	--	0.03	--	0.01	0.47	--	0.03	--	90	53	0	4	3	0
	OLYMPIA	48	38	54	34	43	5	3.41	1.55	1.65	16.68	134	3.68	88	100	83	0	0	7	2
	QUILLAYUTE	48	38	50	33	43	3	6.76	3.47	2.32	29.37	127	7.89	104	100	84	0	0	7	6
	SEATTLE-TACOMA	48	41	53	39	44	5	1.88	0.63	0.94	11.16	126	2.17	74	97	76	0	0	7	1
	SPOKANE	41	33	49	31	37	11	0.46	0.00	0.20	4.11	117	0.84	77	96	78	0	4	4	0
	YAKIMA	47	26	60	23	36	7	0.22	-0.06	0.16	0.98	46	0.22	33	98	57	0	7	2	0
WV	BECKLEY	43	28	54	12	36	7	1.08	0.42	0.67	6.90	144	2.55	166	91	60	0	5	3	1
	CHARLESTON	45	28	57	17	36	4	1.18	0.52	0.80	6.75	137	3.57	232	95	66	0	5	6	1
	ELKINS	53	25	59	15	39	12	1.04	0.34	0.74	3.85	75	1.86	113	97	48	0	4	4	1
	HUNTINGTON	39	29	56	21	34	2	0.82	0.18	0.71	6.31	130	3.35	223	89	59	0	5	4	1
WI	EAU CLAIRE	14	-4	39	-15	5	-5	0.42	0.20	0.12	1.23	75	0.73	135	88	69	0	7	5	0
	GREEN BAY	14	-2	42	-15	6	-8	0.31	0.04	0.14	0.90	41	0.59	92	83	63	0	7	7	0
	MADISON	17	4	44	-8	11	-5	0.18	-0.06	0.09	1.12	46	0.82	134	86	62	0	7	4	0
	MILWAUKEE	21	9	42	-6	15	-3	0.30	-0.07	0.15	1.99	61	1.10	122	91	60	0	7	6	0
WY	CASPER	45	22	50	15	33	11	0.05	-0.08	0.05	0.24	25	0.14	47	78	34	0	6	1	0
	CHEYENNE	46	25	52	19	36	10	0.00	-0.08	0.00	0.78	130	0.33	174	72	29	0	6	0	0
	LANDER	48	23	51	18	35	16	0.00	-0.11	0.00	0.27	33	0.03	12	67	24	0	7	0	0

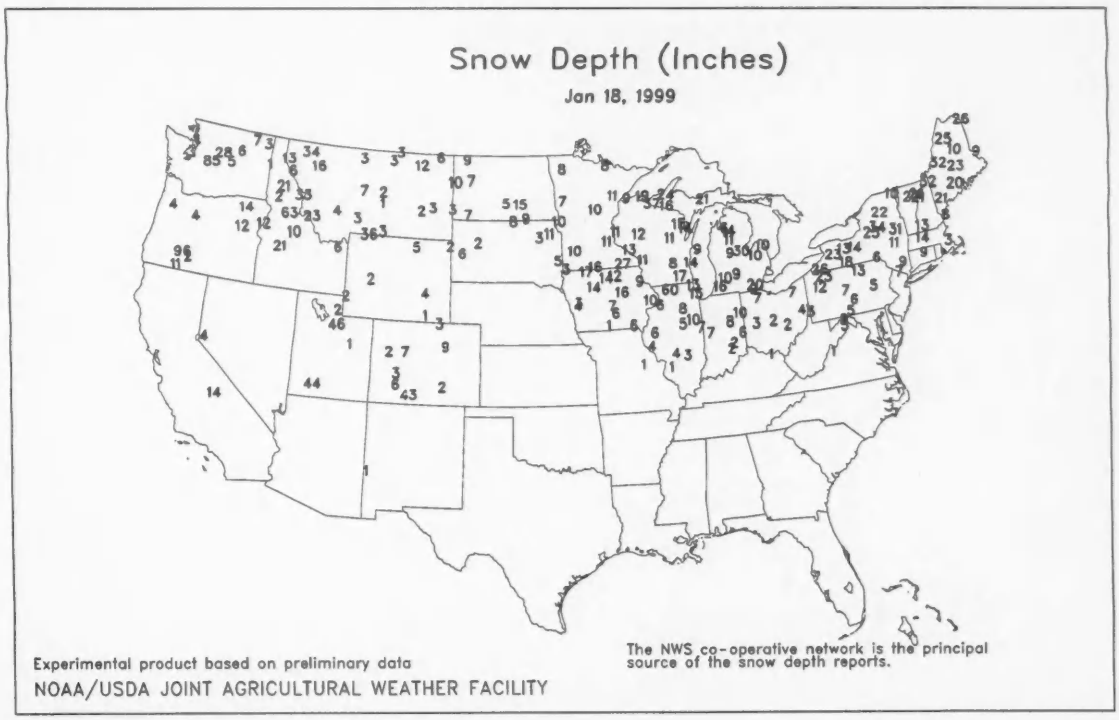
NOTE: These data are preliminary and subject to change. In the past, precipitation totals from a number of stations have been incomplete.

National Agricultural Summary

January 11 - 17, 1999

HIGHLIGHTS

Seasonally mild weather remained entrenched over the Rocky Mountains and extended eastward into the Great Plains and across the Southern U.S. Despite the moderate temperatures, growth of small grains was limited in the southern Plains due to excessive dryness. In California, small grain development was hindered by a combination of dry soils and cool, cloudy weather. The dry weather aided vegetable harvest throughout the State and permitted normal pruning and fertilizing activities in vineyards and non-citrus fruit orchards. Citrus growers in the San Joaquin Valley delayed widespread picking while evaluating freeze damage, but picking was active in southern groves. In Florida, warm weather promoted development of citrus bloom buds and open bloom flowers and aided vegetable growth. Dry weather forced citrus growers in sandy and well-drained areas to irrigate groves to maintain tree conditions. The eastern U.S. received mixed precipitation, including rain in the southern Appalachians, freezing rain along the mid-Atlantic Coast, and snow in the Northeast. A high pressure ridge over the Pacific Northwest weakened, allowing storms to return with heavy rains along coastal areas and snow in the interior mountain areas. The Corn Belt remained cold and dry, especially around the Great Lakes. Parts of the upper Mississippi Valley and northern Plains received a light dusting of snow.


Snow Depth (Inches)
Jan 18, 1999
Experimental product based on preliminary data
NOAA/USDA JOINT AGRICULTURAL WEATHER FACILITY
The NWS co-operative network is the principal source of the snow depth reports.

1998 Weather Review

Highlights

Wet, stormy weather early in the year stretched from California to Florida and the rest of the Southeast, as El Niño-influenced storms battered the West Coast and rode the southern jet stream eastward. An unusually mild winter over most of the country preceded severe spring-summer drought and heat in the South. Heavy rains and numerous severe storms during the spring lashed the Midwest and Northeast, but summer wetness benefited farmers in the Corn Belt. Unusual autumn warmth covered most of the Nation as above-normal precipitation soaked central and western areas while dryness intensified in parts of the East. An active Atlantic tropical storm season resulted in seven tropical storms and hurricanes striking the country. In Hawaii, drought that began late in 1997 continued into the spring of 1998. For the year as a whole, the contiguous States were abnormally warm and wet. Nineteen ninety-eight was in a virtual tie with 1934 as the warmest year on record. This was also the fifth wettest year on record, despite the severe springtime drought across the South (table 1, figs. 1 and 2).

Winter (December 1997- February 1998)

The El Niño contributed to abnormally mild and wet winter weather over much of the country. Storminess was especially pronounced in California and Florida. Precipitation amounts for the 3-month period exceeded 30 inches and 400 percent (%) of normal over western parts of both States. Winter temperatures averaged 5 to 12°F above normal from the North Central States to the Northeast, helping the Nation record its second mildest winter in more than 100 years. The warmth contributed to a dearth of snowfall at low-elevation locations, especially along the East Coast. However, higher elevations in the interior picked up

Table 1. Temperature/Precipitation Rankings for 1998
Based on the Period 1895-1998
1 = Driest/Coldest, 104 = Wettest/Hottest

Region	Precipitation	Temperature
Northeast	72	104
East North Central	79	103
Central	90	103
Southeast	80	102
West North Central	94	101
South	64	101
Southwest	68	90
Northwest	98	102
West	101	53
National	100	104

heavy snows from several coastal storms, most notably on January 27-28, when a storm blanketed West Virginia with up to 35 inches. In northern New England and upstate New York, a major ice storm coated surfaces with a 1- to 3-inch layer of glaze during January 5-9, causing extensive damage to trees and powerlines. According to the USDA Forest Service, ice from the unprecedented storm damaged 18 million acres of forestland. During the same period, heavy rains triggered flooding in the Southeast. In California, February storms dumped more than 15 inches of rain in some locations and heavy snows in the Sierra Nevada. Los Angeles' monthly rainfall total of 13.68 inches broke a February record that had stood since 1884. Florida measured its wettest November-March period ever, with El Niño-influenced storms causing tornadoes and flooding. On February 22-23, a low-pressure system triggered Florida's deadliest tornado outbreak on record, leaving 41 people dead.

Spring (March-May)

Spring featured abnormally cool and wet weather over California, Nevada, and Arizona, as well as above-normal precipitation across the Corn Belt and East Coast. Three-month precipitation totals exceeded 200% of normal across most of California, while temperatures lagged the normal by 2 to 4°F or more. Spring also saw the start of severe drought across Texas and Florida, as the winter season rains came to an abrupt halt during March along the Gulf Coast. Hot weather arrived in southern Texas in early May and then spread across the South, intensifying dryness.

Ironically, the coldest weather of the season arrived during the first 2 weeks of March, the start of the meteorological spring. Temperatures averaged 10 to 24°F below normal over the Great Plains and much of the Southeast during the second week of March, setting about 150 daily-record lows. Hastings, NE set a March record with -15°F on the 11th and St. Louis saw its lowest reading of the season on March 12 with 4°F. Snow cover protected winter wheat from significant damage in the hardest-hit areas. Three consecutive freezes (March 11-13) hit peach-growing areas in the Southeast.

In contrast to earlier cold weather, a summer-like warm spell at the end of March produced about 200 daily-record highs and more than 20 March-record highs. Heavy rains (4-12 inches) early in the month caused extensive flooding in parts of Alabama and Georgia. The end of the heavy rains in late March was initially favorable in Florida, allowing floodwaters to subside. April record rains drenched the Ohio Valley and parts of the Southeast. Late April frosts caused spotty damage to fruit-tree blooms and vineyards in the Great Lakes region into the Northeast.

May was a month of contrasts, as record high rainfall covered California, Washington, Oregon, Nevada, and Idaho, while heat and dryness intensified from New Mexico to Florida. A number of Texas cities set or tied monthly records by collecting no measurable rain during the entire month, including Laredo, Brownsville, and Victoria. Del Rio and Abilene also notched their highest May average temperatures ever. In the Northeast, persistent wetness prevailed early in the month, with Williamsport, PA recording 13 consecutive days of rain from April 30 to May 12.

In Hawaii, El Niño-related drought developed during the autumn of 1997 and continued to at least May of 1998. From January to mid-June, Honolulu measured only 1.76 inches of rain, which was 16% of normal. Rains brought significant improvement after May to some areas, but drought lingered elsewhere through year end.

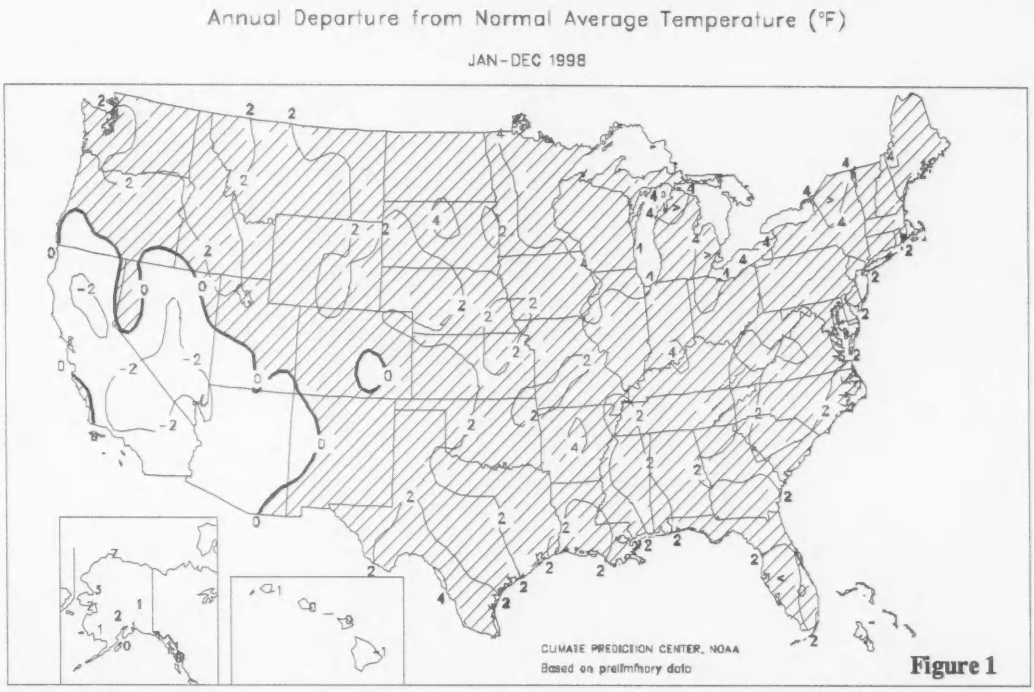

Annual Departure from Normal Average Temperature (°F)
JAN-DEC 1998
CLIMATE PREDICTION CENTER, NOAA
Based on preliminary data

Figure 1

A number of severe weather outbreaks affected areas east of the Rockies during the spring, including deadly tornado outbreaks in Georgia on March 20, Minnesota on March 29, Alabama and Georgia on April 9, Tennessee and Kentucky on April 16, and South Dakota on May 30. The annual national tally of 129 tornado deaths was well above the long-term average of 77.

Summer (June-August)

Hot, dry weather early in the summer resulted in severe drought across the South, while heavy rains caused flooding in the Midwest and Northeast. Summer temperatures averaged more than 4°F above normal in much of Texas, Oklahoma, and Arkansas, as well as parts of Louisiana and Florida. With high pressure aloft shunting storm systems northward, 3-month rainfall totaled more than 50% above normal over much of the Midwest and parts of New England.

Noteworthy dryness and heat prevailed during June in Texas and Florida, with some of the heat migrating northward and affecting Oklahoma and Kansas by the end of the month. In Florida, Daytona Beach, Melbourne, and Orlando all reported the hottest June on record. Melbourne also set a record for the driest June, with a rainfall total of 0.16 inches (3% of normal). Amarillo, TX tallied just 0.12 inches this month. Regionally, the South tabulated its driest and warmest May-June ever. Tinder dry woodlands encouraged the spread of fires in Florida, where nearly one-half million acres burned from May into July. In contrast, the West reported its wettest May-June on record, and heavy rains caused flooding in the Midwest and New England during June. Warm weather finally arrived in California's Central Valley during July, following a very wet and cool spring. Temperatures rose to 110°F and higher in the Central Valley during early August.

In early June, a cold snap struck the northern Plains while the southern Plains baked under 100-degree heat. Temperatures dipped into the 20's F in North Dakota and Minnesota on June 4, and 3 inches of snow fell on Rapid City, SD on June 2-3.

By early July, severe drought covered most of Texas and Florida, southern Georgia, and parts of Alabama, Louisiana, and Arkansas, while moderate drought affected eastern New Mexico and southern Oklahoma. Scattered thunderstorms began easing drought in Florida and elsewhere in the Southeast during July, though drought persisted in the southern Plains. Despite excessive wetness during June in many areas and dryness later in the north, particularly in Michigan, overall summer rainfall and temperature patterns favored crops in the Corn Belt.

Drought gradually developed to the east, as wetness during the first half of the year preceded dryness during the second half of the year over the mid-Atlantic region and parts of the Ohio and Tennessee Valleys.

Tropical storms began relieving dryness across the South in August. Tropical Storm Charley was the first of seven tropical systems to strike the country this year, crossing the Texas coast on August 22. The storm dropped more than 17 inches of rain in the Del Rio area the following day, causing major flooding, but the rains were beneficial for other parts of south Texas. Hurricane Bonnie made landfall in North Carolina on August 26, damaging coastal areas of North Carolina and Virginia, but easing dryness in the interior.

Autumn (September-November)

Autumn featured above-normal temperatures over nearly the entire country, making this the second warmest autumn in more than 100

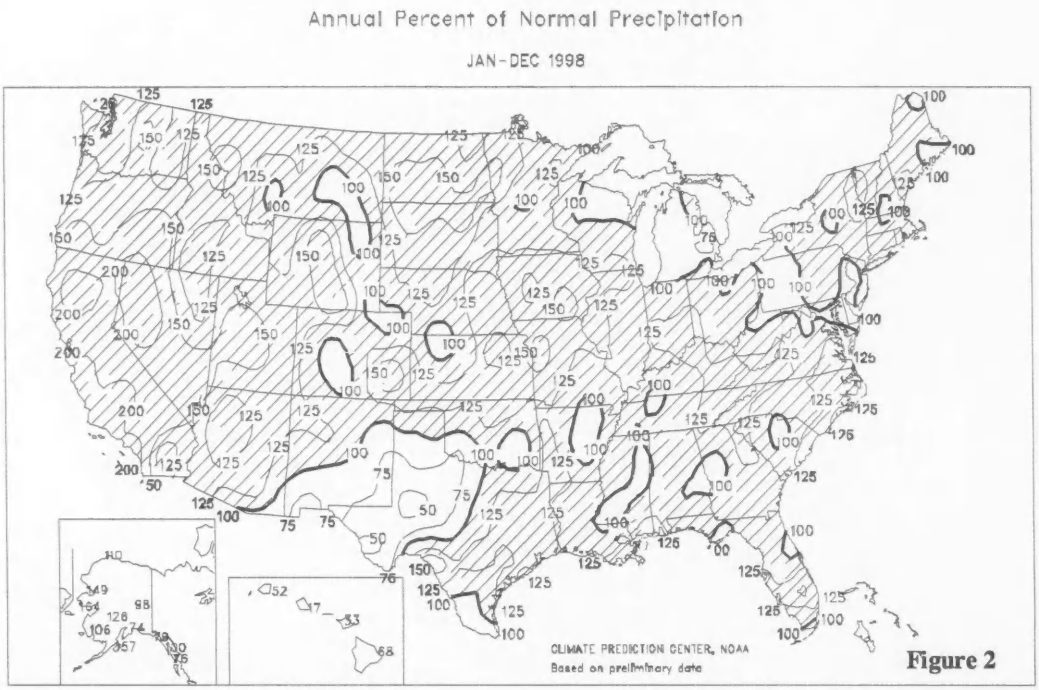


Figure 2

years. Tropical and extratropical storms brought well above-normal precipitation to the West, Central, and South. Dryness (less than 75% of normal) covered a large part of the East from Tennessee to New Jersey. July-November precipitation was the lowest since 1930 in Washington, DC and Baltimore, MD. The wetness gradually eliminated drought over most of the southern Plains and Gulf States, but the dry weather and high temperatures intensified drought over the mid-Atlantic and Tennessee Valley regions.

Tropical activity included Hurricane Earl, which hit northwestern Florida on September 3; Tropical Storm Frances, making landfall in Texas on September 11; Hurricane George, which caused extensive damage to Puerto Rico on September 21-22 before crossing the Florida Keys and making landfall in Mississippi on September 27; and Tropical Storm Mitch, which crossed southern Florida on November 4-5.

October was especially wet across the Plains, eliminating rainfall deficits but causing harvest delays and some flooding. Torrential rains triggered major flooding in southeast Texas on October 17-19. On the 17th, San Antonio collected 11.26 inches of rain, the city's wettest day ever. More record rains hit south Texas in mid-November, Victoria measuring 8.44 inches on the 12th to 14th. At month's end, heavy rain in Oklahoma and Kansas left standing water and washed out some low-lying wheat fields. A major winter-type storm crossed the Great Plains on November 10, bringing damaging winds up to 90 mph and over a foot of snow to the northern Plains.

Autumn warmth broke numerous records, as September's heat produced over 400 daily-record highs, and unprecedented warmth from mid-November to early December broke or tied some 700 daily records. Even the north coast of Alaska was unusually mild, the autumn temperature at Barrow averaging 12°F above normal.

A series of Pacific storms began slamming into the Northwest during November, benefiting winter wheat areas in the east but causing wind damage and river flooding in the west. Seattle, WA set a November record with 11.62 inches of rain.

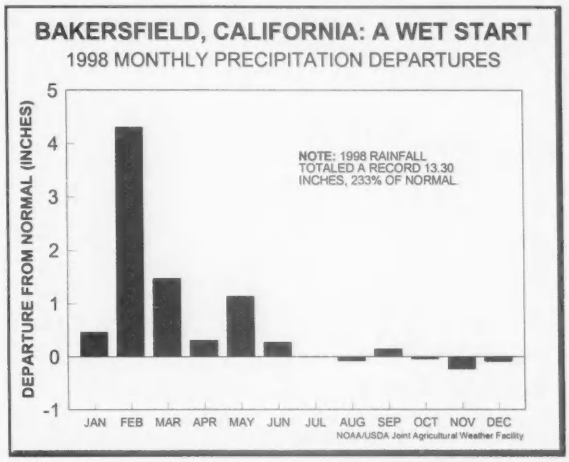
December

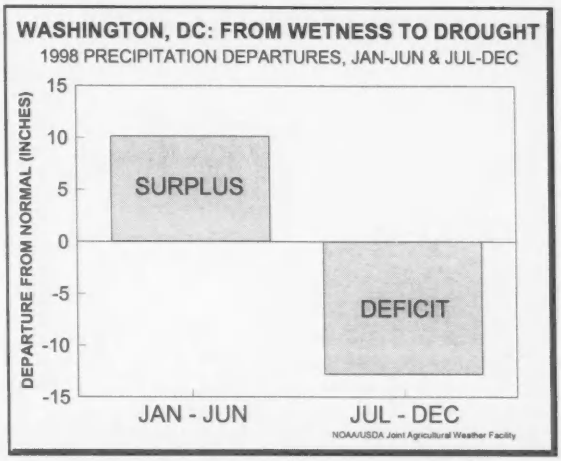
Storms continued to plow into Washington and Oregon during December, with one potent system bringing heavy rain and snow on December 28. As the year closed, flooding was still widespread in the Northwest, though water levels were subsiding.

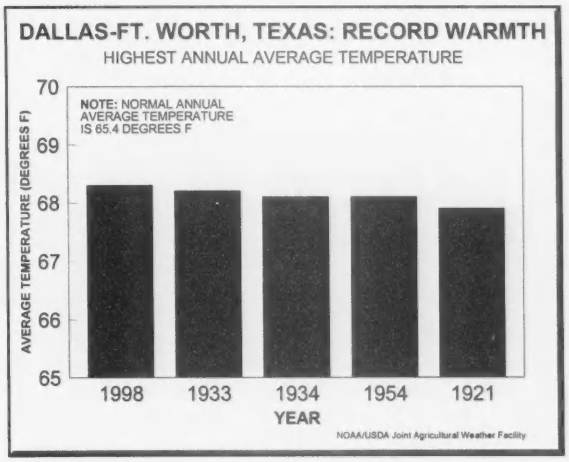
The November "heat wave" continued into the first week of December, but very cold air invaded the country on December 19-21, bringing subzero cold and a blizzard to the Great Plains. Cold air enveloped nearly the entire country, including California, where freezes struck the San Joaquin Valley on December 21-25, damaging citrus and vegetables. Minimum temperatures dropped to near zero during December 20-24 in the Northwest's white winter wheat region, raising concerns about potential damage.

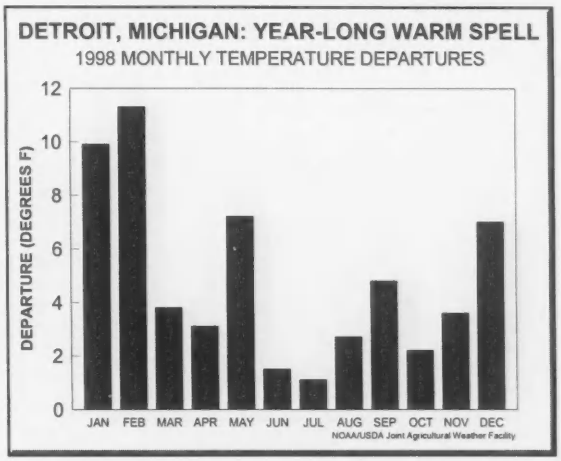
Freezing rain and sleet overspread an extensive area from Texas to Virginia on December 23-24, causing major power outages and traffic delays. Another blast of cold air stretched across the eastern half of the country during the last days of the year. Indianapolis, IN measured its lowest temperature of the year (4°F) on December 31.

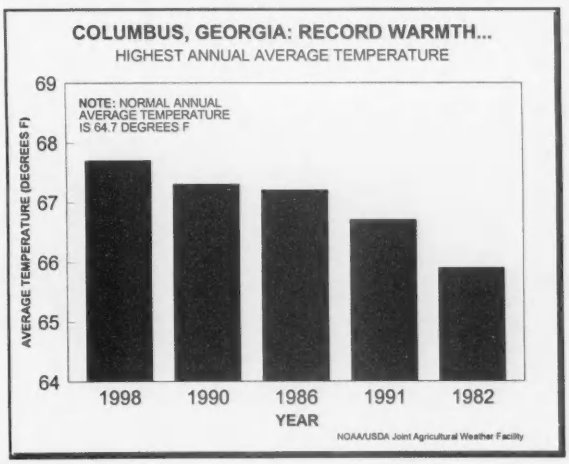
1998 Weather: The Year in Graphs

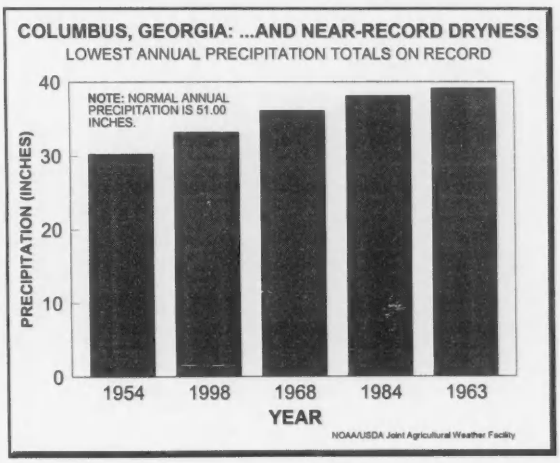












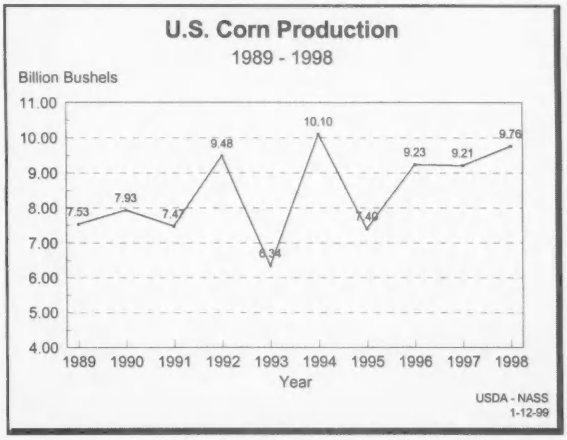
PRECIPITATION SUMMARY
Annual 1998

STATES AND STATIONS		TEMP., °F		PRECIP., IN.	
		AVERAGE	DEPARTURE	TOTAL	DEPARTURE
AL	BIRMINGHAM	65	3	66.75	12.18
	HUNTSVILLE	63	3	45.76	-11.41
	MOBILE	69	1	86.50	22.54
	MONTGOMERY	67	2	48.40	-5.03
AK	ANCHORAGE	38	2	11.80	-4.11
	COLD BAY	39	1	44.35	8.35
	FAIRBANKS	29	2	10.65	-0.22
	JUNEAU	42	2	53.45	-0.86
	KODIAK	42	1	106.21	38.63
	NOME	29	2	27.51	12.64
	YAKUTAT	40	2	119.26	-31.99
AZ	FLAGSTAFF	44	-1	27.36	4.56
	PHOENIX	72	0	10.53	2.87
	TUCSON	68	0	13.62	1.62
AR	FORT SMITH	64	3	44.71	3.81
	LITTLE ROCK	65	4	40.98	-9.88
CA	BAKERSFIELD	62	-3	13.30	7.58
	EUREKA	53	0	63.68	26.15
	FRESNO	62	-1	17.85	7.25
	LOS ANGELES	62	-1	25.70	13.68
	PASO ROBLES	59	0	20.09	7.56
	REDDING	60	-2	61.57	28.27
	SACRAMENTO	60	-1	28.90	11.38
	SAN DIEGO	63	-1	15.99	6.09
	SANTA BARBARA	59	0	44.51	28.26
	STOCKTON	60	-2	25.64	11.70
	SAN FRANCISCO (SFO)	57	0	32.58	12.86
CO	ALAMOSA	42	1	6.94	-0.63
	CO. SPRINGS	49	1	16.21	-0.03
	DENVER	50	-1	15.93	0.52
	GRAND JUNCTION	53	0	9.12	0.48
	PUEBLO	52	-1	11.96	0.77
CT	BRIDGEPORT	54	2	41.81	0.15
	HARTFORD	52	2	45.08	0.95
DE	WILMINGTON	57	2	36.56	-4.28
DC	WASHINGTON	60	2	35.93	-2.70
FL	DAYTONA BEACH	72	2	40.51	-7.38
	FT.LAUDERDALE	79	3	69.10	8.46
	FT. MYERS	75	1	68.02	14.65
	JACKSONVILLE	70	2	56.72	5.40
	KEY WEST	78	0	37.94	-1.65
	MELBOURNE	74	3	56.38	10.89
	MIAMI	78	2	70.36	14.45
	ORLANDO	74	1	43.75	-4.36
	PENSACOLA	70	2	68.35	6.09
	TALLAHASSEE	70	2	58.84	-6.87
	TAMPA	74	2	55.33	11.41
	W. PALM BEACH	76	2	67.55	6.80
GA	ATHENS	63	2	50.35	0.61
	ATLANTA	63	2	45.98	-4.80
	AUGUSTA	65	2	47.67	3.00
	COLUMBUS	67	3	33.19	-17.81
	MACON	66	2	43.35	-1.28
	SAVANNAH	68	1	48.56	0.34
HI	HILO/HAWAII	73	-1	108.57	-20.62
	HONOLULU/OAHU	77	0	4.52	-17.50
	KAHALUI/MAUI	75	-1	6.51	-14.42
	LIHUE/KAUAI	74	-1	26.89	-16.11
ID	BOISE	54	3	16.72	4.61
	LEWISTON	54	2	17.56	5.13
	POCATELLO	48	1	13.50	1.36
IL	CHICAGO	53	4	37.53	1.71
	MOLINE	53	4	48.37	9.29
	PEORIA	54	4	42.28	6.03
	ROCKFORD	51	4	39.93	3.65
	SPRINGFIELD	55	3	44.89	9.64
IN	EVANSVILLE	59	3	45.67	2.54
	FT. WAYNE	53	3	40.28	5.53
	INDIANAPOLIS	56	3	46.98	7.04
	SOUTH BEND	53	3	34.97	-4.16
IA	BURLINGTON	57	6	52.46	16.40
	CEDAR RAPIDS	51	3	45.72	12.00
	DES MOINES	52	2	39.94	6.82
	DUBUQUE	51	4	43.32	4.97
	SIOUX CITY	51	2	30.91	5.05
	WATERLOO	50	4	44.80	11.10
KS	CONCORDIA	55	2	33.15	4.37
	DODGE CITY	57	2	21.77	0.29
	GOODLAND	52	1	18.30	0.10
	HILL CITY	54	1	19.85	-3.04
	TOPEKA	57	3	42.16	6.94
	WICHITA	59	3	34.66	5.33
KY	JACKSON	58	2	53.40	3.73
	LEXINGTON	57	2	49.64	5.09
	LONDON/CORBIN	58	3	47.19	1.54
	LOUISVILLE	60	4	52.26	7.87
	PADUCAH	60	3	55.97	6.66
LA	BATON ROUGE	69	1	56.59	-4.30
	LAKE CHARLES	70	2	56.58	1.74
	NEW ORLEANS	71	3	79.04	17.16
	SHREVEPORT	68	3	50.61	4.50
ME	CARIBOU	41	3	36.00	-0.60
	PORTLAND	48	3	54.76	10.42
MD	BALTIMORE	57	2	34.38	-6.38
MA	BOSTON	53	2	53.69	12.19
	WORCESTER	50	3	48.99	-0.76
MI	ALPENA	46	3	32.25	3.42
	DETROIT	53	4	34.93	2.31
	FLINT	51	4	22.77	-7.51
	GRAND RAPIDS	51	4	30.39	-5.65
	HOUGHTON LAKE	47	4	24.43	-3.82
	LANSING	50	3	28.55	-2.06
	MARQUETTE	--	--	28.34	-6.96
	MUSKEGON	49	2	28.31	-4.25
	SAULT STE. MARIE	--	--	35.42	1.19
	TRAVERSE CITY	49	4	26.23	-3.53
MN	DULUTH	43	4	33.69	3.70
	INT'L FALLS	41	4	22.54	-1.81
	MINNEAPOLIS	49	4	33.41	5.09
	ROCHESTER	47	4	32.14	2.48
	ST. CLOUD	46	5	25.93	-1.50
MS	JACKSON	67	2	51.55	-3.83
	MERIDIAN	65	1	54.28	-2.42
	TUPELO	64	2	51.15	-4.72
MO	COLUMBIA	57	3	44.93	5.89
	KANSAS CITY	57	3	49.45	11.83
	ST. JOSEPH	56	3	49.12	13.43
	ST. LOUIS	59	3	43.62	6.11
	SPRINGFIELD	58	2	48.47	5.43
MT	BILLINGS	49	2	13.46	-1.83
	BUTTE	42	3	15.44	3.34
	GLASGOW	45	3	15.30	4.34
	GREAT FALLS	46	1	16.64	1.43
	HELENA	45	1	12.61	1.02
	KALISPELL	45	3	21.04	4.54
	MILES CITY	49	3	14.00	-0.07
	MISSOULA	47	2	21.81	8.35
NE	GRAND ISLAND	52	2	25.99	1.09
	HASTINGS	53	3	31.89	4.09
	LINCOLN	53	2	34.23	5.97
	NORFOLK	51	2	35.16	10.01
	NORTH PLATTE	49	1	22.44	3.14
	OMAHA (EPPLEY)	53	2	39.72	9.86
	SCOTTSBLUFF	49	1	18.07	2.80
	VALENTINE	46	-1	24.05	5.82
NV	ELKO	46	0	12.43	2.50
	ELY	44	0	12.22	2.09
	LAS VEGAS	67	0	6.96	2.83
	RENO	51	0	12.12	4.59
	WINNEMUCCA	48	-1	15.63	7.40
NH	CONCORD	49	3	35.87	7.00
NJ	ATLANTIC CITY	56	3	41.40	1.11
	NEWARK	57	2	43.45	-0.52
NM	ALBUQUERQUE	57	1	9.83	0.95
NY	ALBANY	50	3	38.97	2.80
	BINGHAMTON	49	3	39.27	2.28
	BUFFALO	51	3	34.70	-2.13
	NYC/CENTRAL PARK	--	--	48.69	1.44
	ROCHESTER	51	3	41.96	10.00
	SYRACUSE	51	3	37.03	-1.90
NC	ASHEVILLE	57	2	48.02	0.22
	CHARLOTTE	63	3	41.05	-2.04
	GREENSBORO	60	2	48.23	5.61
	HATTERAS	63	1	62.74	6.65
	RALEIGH-DURHAM	61	2	52.68	11.25
	WILMINGTON	65	2	64.19	9.92
ND	BISMARCK	45	3	23.70	1.90
	DICKINSON	45	3	24.83	8.72
	FARGO	45	4	31.86	12.41
	GRAND FORKS	42	3	23.91	5.57
	JAMESTOWN	44	3	21.84	4.95
	MINOT	44	3	20.96	2.39
	WILLISTON	43	2	17.84	4.17
OH	AKRON-CANTON	52	2	40.27	3.45
	CINCINNATI	56	3	51.39	10.06
	CLEVELAND	53	4	32.82	-3.81
	COLUMBUS	56	5	37.56	-0.53
	DAYTON	55	3	39.22	2.58
	MANSFIELD	52	3	37.48	-2.18
	TOLEDO	53	5	32.63	-0.33
	YOUNGSTOWN	52	3	37.57	0.25
OK	OKLAHOMA CITY	63	3	35.33	1.97
	TULSA	62	2	46.47	5.88
OR	ASTORIA	51	0	89.15	22.75
	BURNS	45	1	16.34	6.38
	EUGENE	53	0	50.39	1.02
	MEDFORD	55	1	28.72	9.87
	PENDLETON	54	2	14.45	2.43
	PORTLAND	55	2	46.07	9.77
	SALEM	54	2	52.18	13.02
PA	ALLENTOWN	54	3	39.71	-3.81
	ERIE	53	4	33.62	-7.91
	HARRISBURG	56	4	45.96	5.46
	PHILADELPHIA	58	4	31.66	-9.75
	PITTSBURGH	54	3	34.21	-2.63
	SCRANTON	52	3	34.75	-1.43
	WILLIAMSPORT	53	3	40.13	-0.58
RI	PROVIDENCE	53	3	52.70	7.16
SC	BEAUFORT	68	2	50.78	-0.62
	CHARLESTON	68	2	67.75	16.23
	COLUMBIA	66	3	46.47	-3.44
	FLORENCE	66	3	43.76	-0.08
	GREENVILLE	62	2	51.98	0.71
SD	ABERDEEN	45	2	28.50	9.96
	HURON	49	3	25.20	5.12
	RAPID CITY	48	1	21.09	4.45
	SIOUX FALLS	47	2	31.12	7.25
TN	BRISTOL	57	2	43.82	3.10
	CHATTANOOGA	63	3	54.07	0.81
	KNOXVILLE	61	3	53.91	6.77
	MEMPHIS	65	3	51.76	-0.34
	NASHVILLE	62	3	51.89	4.59
TX	ABILENE	66	2	13.88	-10.52
	AMARILLO	59	2	17.14	-2.42
	AUSTIN	71	2	39.11	7.23
	BEAUMONT	70	2	58.25	1.06
	BROWNSVILLE	75	2	19.85	-6.76
	COLLEGE STATION	70	2	45.07	5.99
	CORPUS CHRISTI	73	2	30.62	0.49
	DALLAS-FT.WORTH	68	3	34.24	0.54
	DEL RIO	72	3	28.91	10.67
	EL PASO	64	1	6.77	-2.04
	GALVESTON	72	2	51.66	9.38
	HOUSTON	71	3	54.76	8.69
	LUBBOCK	62	2	13.06	-5.59
	MIDLAND	66	3	5.14	-9.82
	SAN ANGELO	67	2	12.98	-7.47
	SAN ANTONIO	70	2	42.10	11.12
	VICTORIA	71	1	46.35	8.94
	WACO	69	2	35.48	3.53
	WICHITA FALLS	66	3	23.03	-5.87
UT	SALT LAKE CITY	53	1	23.72	7.54
VT	BURLINGTON	48	3	50.42	15.96
VA	LYNCHBURG	57	1	47.71	6.83
	NORFOLK	62	2	54.76	10.12
	RICHMOND	60	2	46.71	3.55
	ROANOKE	58	3	45.03	3.90
	WASHINGTON/DULLES	57	3	37.43	-2.81
WA	BELLINGHAM	52	2	36.64	0.46
	OLYMPIA	51	2	57.62	7.03
	QUILLAYUTE	50	1	104.14	-1.05
	SEATTLE	53	1	43.98	6.79
	SPOKANE	50	3	17.75	1.27
	WENATCHEE	53	3	11.23	2.92
	YAKIMA	52	2	8.49	0.52
WV	BECKLEY	53	2	48.81	7.78
	CHARLESTON	56	1	48.36	5.83
	ELKINS	51	2	46.19	1.35
	HUNTINGTON	57	2	43.94	2.45
WI	EAU CLAIRE	49	5	29.06	-2.56
	GREEN BAY	48	4	28.77	-0.06
	LACROSSE	52	5	35.90	5.34
	MADISON	50	5	39.94	9.06
	MILWAUKEE	51	5	34.64	1.71
WY	CASPER	46	1	14.52	2.00
	CHEYENNE	47	1	10.82	-3.59
	LANDER	45	0	17.29	4.28
	SHERIDAN	46	1	17.47	2.99
PR	SAN JUAN	81	1	72.55	22.22

Based on 1961-90 normals.

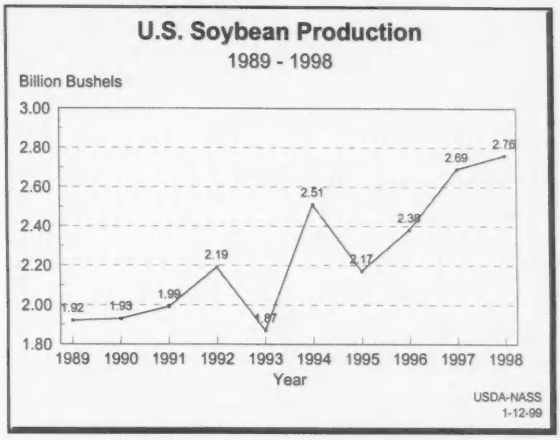
Crop Production Highlights 1998

Corn for grain production was estimated at 9.76 billion bushels, up 6 percent from the 1997 crop, but down 1 percent from the November 1 forecast. The 1998 production ranks second behind the 10.10 billion bushels produced in 1994. The U. S. yield of 134.4 bushels per acre was up 7.7 bushels from a year earlier.



Wet weather briefly delayed the beginning of the corn planting season, but a dry weather pattern emerged in late April and planting rapidly proceeded. By May 31, 1998, planting was 97 percent complete, ahead of the average of 88 percent. Favorable conditions prevailed over most of the Corn Belt through the summer months. By the beginning of August, 91 percent of the corn acreage was silking in the 17 major corn-producing States, compared with the average of 73 percent. At that time, the percent of corn rated good to excellent totaled 68 percent, above the 66 percent in 1997. While the Western and Northern States received timely rainfall, an area extending from Texas to Florida received well below the normal precipitation, causing the corn fields to mature abnormally or be abandoned. Warm, dry conditions in late summer and early fall quickly ripened the crop, and low grain moisture levels allowed farmers to make rapid harvest progress, especially in the western and northern Corn Belt. As of November 1, 83 percent of the crop was harvested, compared with 68 percent for the average. Freezing temperatures arrived in early November, but fields remained dry and harvest was 97 percent complete by November 22.

Soybean production in 1998 totaled 2.76 billion bushels, down slightly from the November 1 forecast, but up 3 percent from 1997. The 1998 production was the highest on record, exceeding the previous record of 2.69 billion bushels set in 1997. The average yield in 1998 was estimated at 38.9 bushels, 0.3 bushel above the November 1 forecast, and tied with the 1997 yield as the second highest on record, exceeded only by the 1994 yield of 41.4 bushels. Planted acres, at 72.4 million, was the largest on record and 3 percent above 1997. Harvested area totaled 70.8 million acres, also a record and 2 percent above 1997.



Planting started at a fast pace and was completed ahead of 1997 and the average. In the eight major producing States, spring planting was completed ahead of last year, despite some delays due to wet conditions during the first half of June in the Corn Belt. In the Mid-Atlantic and Southeastern States, planting also progressed ahead of normal for most of the planting season, but was slowed by dry conditions in late June. The crop developed and matured well ahead of the pace in recent years. In the Corn Belt, seasonal temperatures and adequate moisture supplies aided development until mid-August. Hotter, drier conditions prevailed as the crop approached maturity in late August and September. In the Southeastern and Mid-Atlantic States, the crop was stressed by persistent heat and excessively dry soils. Drought-stricken States had a larger portion of the acres either abandoned or cut for hay, and harvested yields were lower than expected. Soybean harvest began early and progressed ahead of 1997 and the 5-year average, with 96 percent of the crop harvested by November 15th.

All Wheat production for 1998 was estimated at 2.55 billion bushels, down slightly from the estimate published in the September *Small Grains 1998 Summary*, but up 3 percent from the 1997 level. Most of the production decline was in Hard Red Winter wheat and primarily due to a drop in grain area. All winter wheat production dropped fractionally from the previous estimate, as did other spring wheat. Durum production was unchanged.

Warm weather coaxed winter wheat out of dormancy earlier than normal and allowed farmers in the northern Plains to rapidly plant spring wheat. Above-normal temperatures aided emergence of spring wheat in the northern Plains and promoted rapid development and early ripening of wheat throughout the Great Plains, eastern Corn Belt, lower Mississippi Valley, and Southeast. Hot, dry weather in May stressed spring and winter wheat in Montana. Early ripening and dry weather aided harvest efforts, as both the winter and spring harvest seasons began early and progressed ahead of normal throughout the summer.

Upland Cotton planted acreage is estimated at 13.1 million acres, up 4 percent from the August estimate, but down 4 percent from 1997. Harvested acreage at 10.5 million acres, was 20 percent less than last year, mainly due to the large abandonment in Texas. Producers planted 329,900 acres of **American-Pima** cotton in 1998, up 32 percent from 1997. However, harvested acreage was down 5 percent, at 236,500 acres, also due to large abandonment in Texas.

Planting was hindered in the Southeast by cool, wet weather until early-May. Muddy conditions delayed planting even longer in Tennessee. In the lower Mississippi Valley, planting progressed normally with occasional rain delays. Dry conditions aided early progress in the southern Plains, and good stands emerged despite dry soils. In the Southwest, cool, wet weather delayed planting and hindered emergence and early growth. A hot, dry weather pattern that emerged across the southern United States as the summer began, accelerated crop development, but also stunted vegetative growth. In Texas, plants in many non-irrigated fields dropped squares and aborted bolls as soil moisture supplies diminished. As the drought worsened, insect populations increased, further stressing plants. Development remained behind the normal pace in California, despite a mid-summer heat wave. Early ripening and dry weather allowed the harvest season to begin ahead of normal in the southern Plains, Mississippi Delta, and Southeast. As the harvest season continued, progress remained ahead of the 5-year average in most areas, despite locally heavy rains from hurricanes and tropical storms. Late development delayed the harvest season in California.

Sorghum for grain production was estimated at 520 million bushels, essentially unchanged from the November forecast and 18 percent below the 1997 production. Grain yields, at 67.3 bushels per acre, were up 0.8 bushel from November 1 and 1.9 bushels below the 1997 average. The final estimate of all sorghum planted was 9.6 million acres, down 4 percent from the year earlier and 1 percent below the previous estimate. Area harvested for grain was estimated at 7.7 million acres, down 16 percent from 1997.

Planting rapidly progressed in the southern Plains and Mississippi Delta during April and gained momentum in the central and northern Plains and eastern Corn Belt in early May. Emergence and early growth were aided by warm weather and timely showers. Drought-stressed plants during the summer in Texas and parts of the lower Mississippi Valley. Seasonal weather aided development in the Corn Belt and central and northern Great Plains during the summer. Hot weather quickly ripened the crop in the lower Mississippi Valley, allowing harvest to begin early and proceed ahead of schedule. Early ripening and dry weather in late summer aided harvest efforts in the Great Plains and Corn Belt.

Barley production for 1998 is estimated at 352 million bushels, down 2 percent from the previous year crop. The average yield per acre, at 60.1, was up 2.0 bushels from 1997. The area harvested for grain was estimated at 5.87 million acres, 5 percent less than 1997.

Planting and emergence were aided by above-normal temperatures during April. Rapid development was promoted during most of the growing season by warm weather and timely rains. Hot, dry weather stressed barley in Montana during May, but rain and more seasonal temperatures late in the growing season relieved some stress. The crop matured well ahead of normal, allowing harvest to begin early. Dry weather aided harvest during August and by the end of the month, most of the crop was harvested.

Oat production for the 1998 crop year totaled 167.1 million bushels, 2 percent below the September *Small Grains 1998 Summary* and slightly below 1997. The 1998 production is the third smallest on record, exceeding only 1995 and 1996. The grain yield, at 60.4 bushels per acre, is down 0.1 bushel from the September estimate and 0.9 bushel above 1997. Area harvested for grain in 1998 was 2.77 million acres, 42,000 acres below the previous estimate and 2 percent below 1997. This is the second smallest acreage harvested for grain on record, exceeding only the 1996 harvested acreage of 2.66 million.

Planting moved well ahead of normal as the season progressed due to a fast start in the northern Great Plains and northern and eastern Corn Belt. In the western Corn Belt, wet weather briefly delayed the start of the planting season, but progress quickly moved ahead of normal as a dry weather pattern emerged. Emergence also progressed well ahead of normal, aided by unusually warm spring weather. Hot, dry weather during July and August promoted rapid crop development, but also diminished yield and grain quality prospects in several Corn Belt and Great Plains States. In Oregon, a record average yield was recorded due to nearly ideal weather conditions. Early ripening allowed the harvest season to begin early and dry conditions during August allowed the harvest to progress well ahead of normal. By late August, harvest was virtually complete in the major oat-producing States.

Rice production totaled 188 million cwt, up 3 percent from 1997. Area for harvest, at 3.32 million acres, was up 7 percent from 1997. This season marked a year of acreage increases for all major rice-producing States except California. The U.S. yield per harvested acre averaged 5,669 pounds, 228 pounds below last year.

Planting and early-season crop development was notably later than normal in California due to cold, wet spring weather. Dry conditions aided planting in Texas and the lower Mississippi Valley. As the summer progressed, the hot, dry weather promoted rapid development, but also required heavy irrigating to maintain flooded fields. Harvest began early along the western Gulf Coast and proceeded ahead of normal throughout the lower Mississippi Valley. Late crop development delayed the harvest season in California.

International Weather and Crop Summary

Janurary 10 - 16, 1999

HIGHLIGHTS

FSU-WESTERN: Unseasonably mild weather continued to provide favorable overwintering conditions for winter grains.

EUROPE: Unseasonably mild weather continued over the region, keeping most winter grain areas snow-free.

NORTHWESTERN AFRICA: Widespread showers improved growing conditions for winter grains.

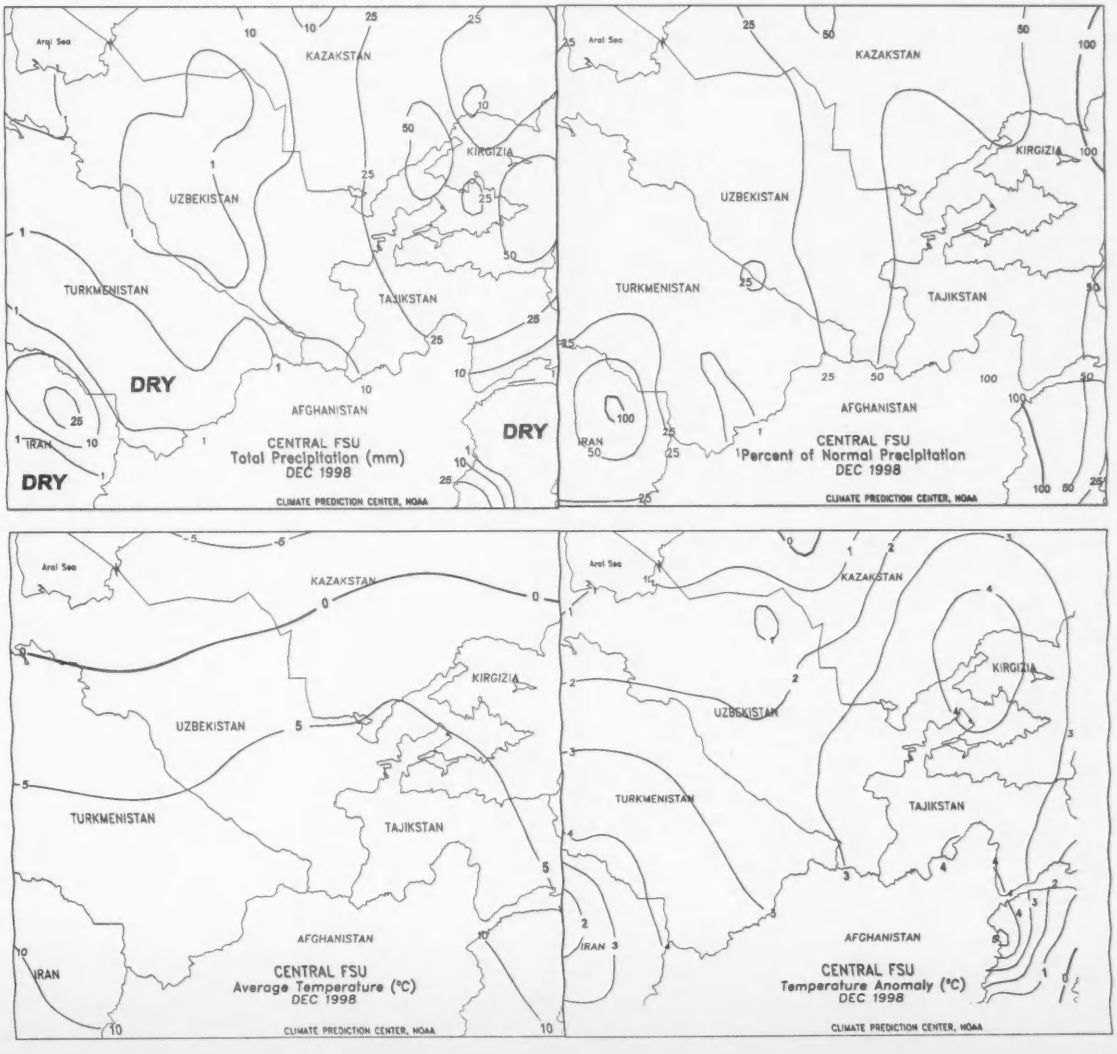
AUSTRALIA: Warm, dry weather across New South Wales favored sorghum and cotton development.

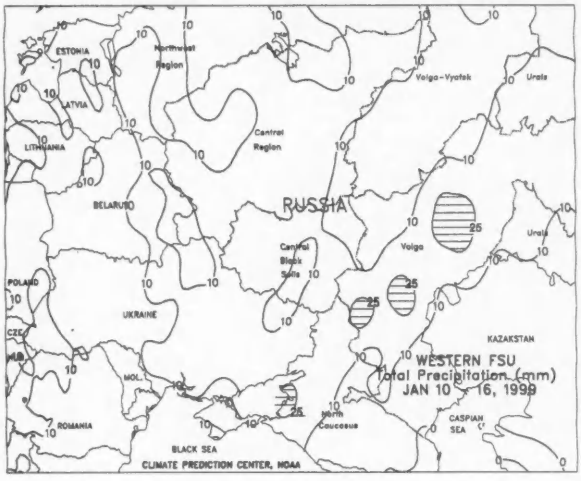
SOUTH AFRICA: Mostly light showers swept across the corn belt as heavy rain covered coastal sugarcane areas.

SOUTHEAST ASIA: Unseasonably heavy showers caused flooding and possible crop damage in the eastern Philippines.

EASTERN ASIA: Seasonably cold weather kept winter wheat dormant across the North China Plain, while rain favored winter grains and oilseeds across southern China.

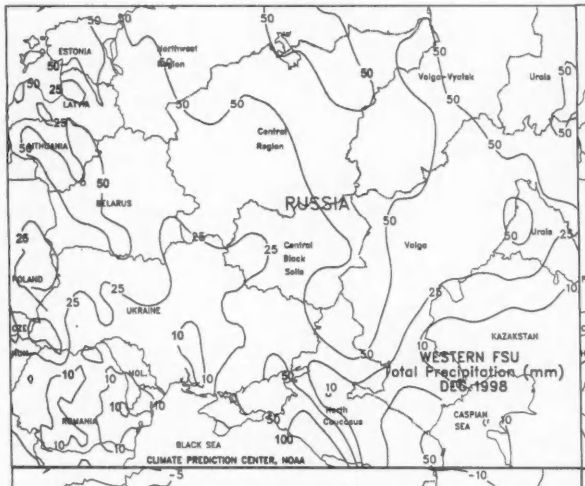
SOUTH AMERICA: Rain boosted soil moisture for vegetative soybeans in Rio Grande do Sul, Brazil, but more rain is still needed.

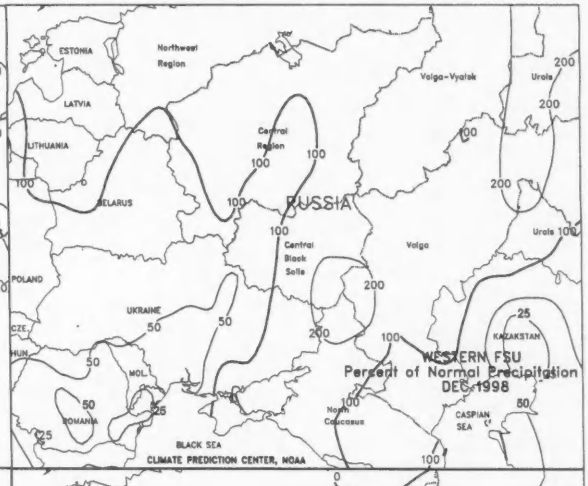


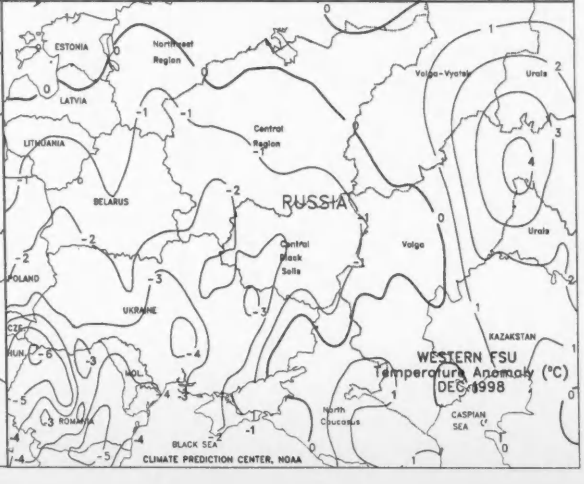


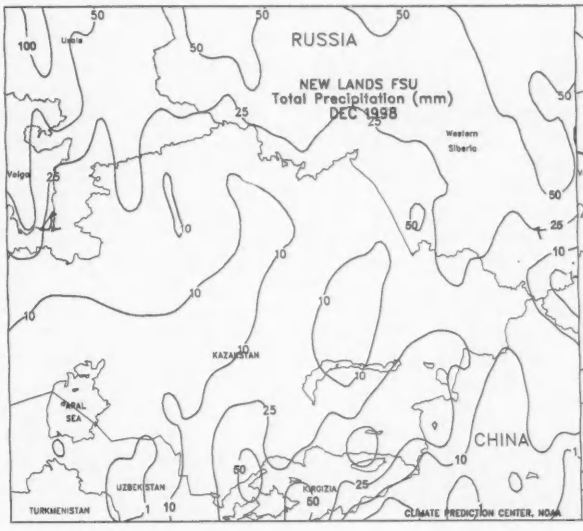
WESTERN FSU

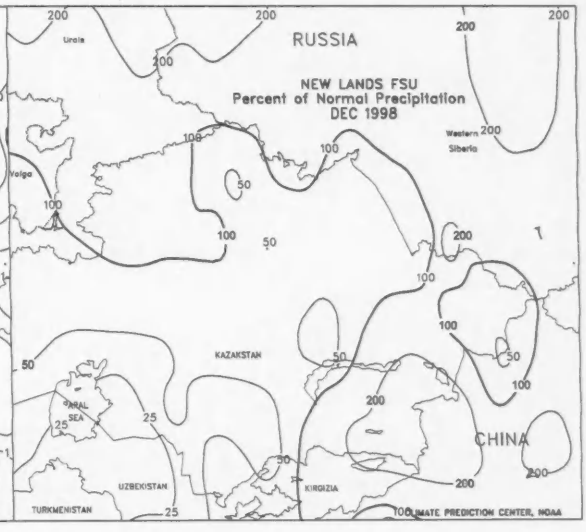
The third consecutive week of unusually mild weather maintained favorable overwintering conditions for winter grains in Russia, Ukraine, and Belarus. Weekly temperatures averaged 2 to 6 degrees C above normal in these areas. Snow cover in most winter wheat areas of Ukraine and southern Russia was thin or patchy, leaving crops vulnerable to potential extreme cold. Widespread light precipitation (3-25 mm) fell in most areas during the week. In December, above-normal precipitation fell in Russia, increasing moisture reserves. The combination of mild weather and abundant moisture in key winter wheat-producing areas of the North Caucasus region improved conditions for dormant crops, following unfavorable dryness in the fall. Elsewhere in Russia, winter grains remained under a moderate to deep snow cover during the month. In Ukraine, below-normal precipitation was observed in most of the country, except in the extreme east, where precipitation was above normal. A protective snow cover persisted in the northern half of Ukraine during December. Snow cover in southern Ukraine gradually diminished during the month. Overwintering conditions in December were mostly favorable for winter grains in Russia, Ukraine, Belarus, and the Baltics. However, there was a brief cold snap on December 23-26, with minimum temperatures ranging from -17 to -30 degrees C in most areas. The exceptions were in the extreme southern Ukraine and the North Caucasus region in Russia, where temperatures ranged from -8 to -15 degrees C. Snow cover was adequate to protect winter grains from widespread damage in areas experiencing the lowest temperatures.

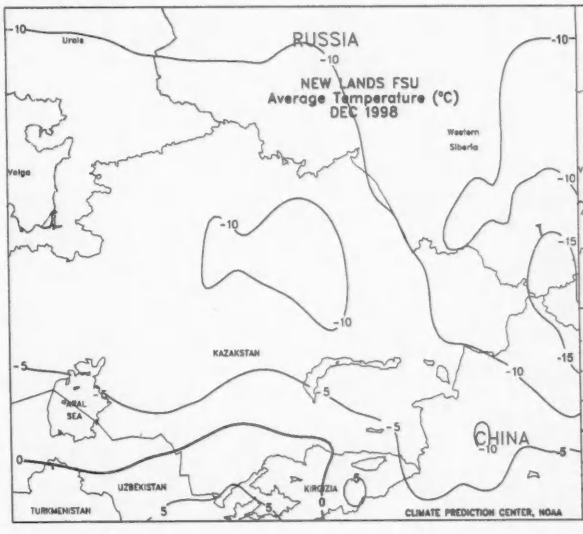


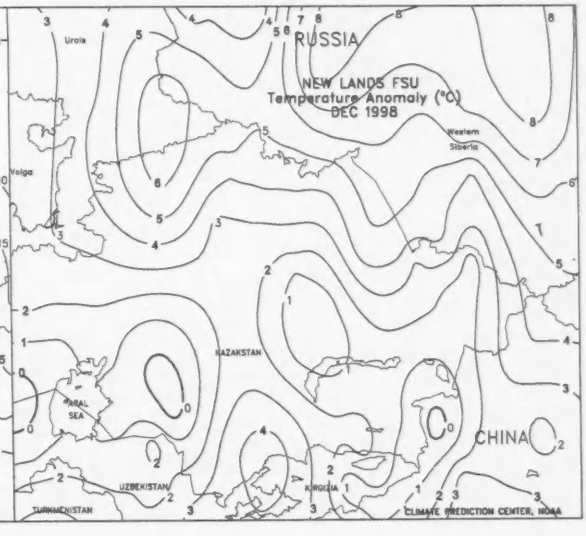





RUSSIA
NEW LANDS FSU
Total Precipitation (mm)
DEC 1998
Urals
Western Siberia
Volga
KAZAKSTAN
ARAL SEA
UZBEKISTAN
KIRGIZIA
TURKMENISTAN
CHINA
CLIMATE PREDICTION CENTER, NOAA

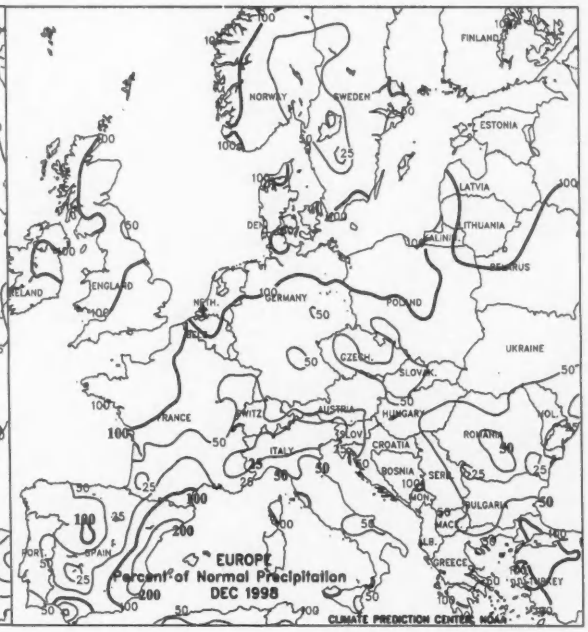

RUSSIA
NEW LANDS FSU
Percent of Normal Precipitation
DEC 1998
Urals
Western Siberia
Volga
KAZAKSTAN
ARAL SEA
UZBEKISTAN
KIRGIZIA
TURKMENISTAN
CHINA
CLIMATE PREDICTION CENTER, NOAA

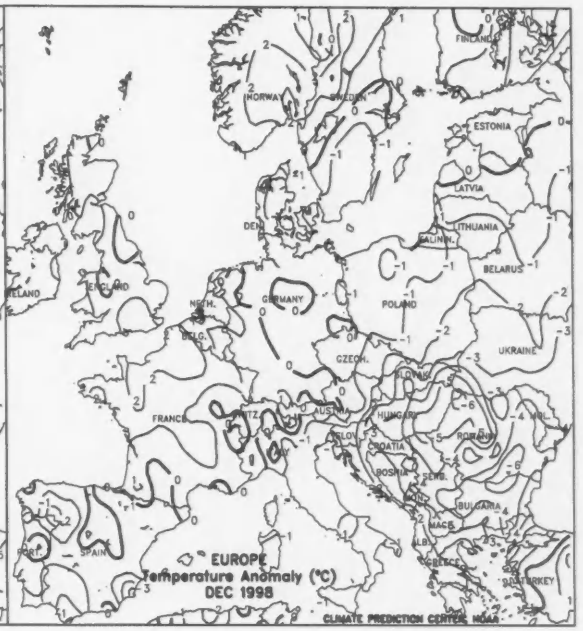

RUSSIA
NEW LANDS FSU
Average Temperature (°C)
DEC 1998
Urals
Western Siberia
Volga
KAZAKSTAN
ARAL SEA
UZBEKISTAN
KIRGIZIA
TURKMENISTAN
CHINA
CLIMATE PREDICTION CENTER, NOAA

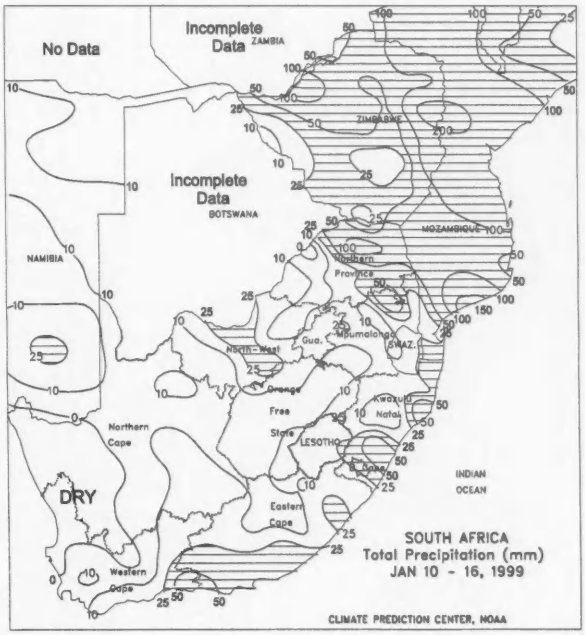

RUSSIA
NEW LANDS FSU
Temperature Anomaly (°C)
DEC 1998
Urals
Western Siberia
Volga
KAZAKSTAN
ARAL SEA
UZBEKISTAN
KIRGIZIA
TURKMENISTAN
CHINA
CLIMATE PREDICTION CENTER, NOAA

EUROPE

Unseasonably mild weather (weekly temperatures averaging 2 to 7 degrees C above normal) continued to prevail over most of Europe, keeping winter grain areas snow-free. The exceptions were in Spain and southern France, where weekly temperatures averaged 1 to 3 degrees C below normal. In northern Europe, light to moderate snow turned to rain (5-30 mm) as warmer air spread eastward across the region during the week. Light, if any, precipitation (generally less than 10 mm) fell in eastern Europe. In Spain, dry weather continued to stress early winter wheat development in southern areas. In December, below-normal precipitation was observed throughout most of Europe, limiting moisture recharge. The exceptions were in extreme northern Europe, where precipitation was above-normal. In the Iberian Peninsula, well-below-normal precipitation in Portugal and the southern half of Spain limited moisture for winter grain emergence and establishment. There was a brief period of bitterly cold weather on December 11-13 that threatened winter grains in eastern Europe. Minimum temperatures ranged from -15 to -22 degrees C from Poland southward into southern Romania. Temperatures below -19 degrees C were restricted to western Poland and Slovakia, approaching the threshold for potential winterkill. However, the extreme cold in these areas was of short duration and preceded by snow, minimizing the threat for widespread damage. A warming trend developed across Europe during the middle of the month and continued until month's end, improving overwintering conditions for winter grains.

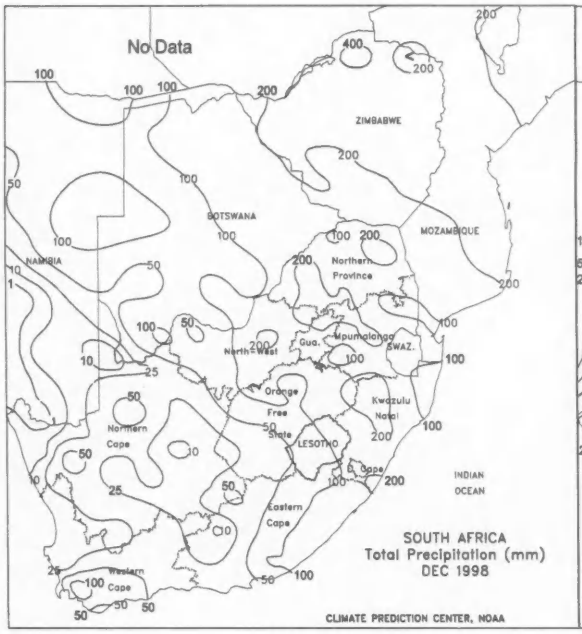






SOUTH AFRICA

Scattered, mostly light showers (15 mm or less, most areas) swept across the corn belt, dampening corn and other summer crops advancing through reproduction. Highs generally ranged from the middle 20's to lower 30's degrees C, favoring reproductive development of grains and oilseeds. Heavier rain (25-50 mm, locally exceeding 100 mm) returned to sugarcane areas of Kwazulu-Natal and coastal crop areas of Eastern and Western Cape. In December, frequent, near- to above-normal rainfall maintained adequate to abundant moisture reserves for vegetative summer crops, including corn and sugarcane. Temperatures were generally near to slightly below normal. In Western Cape, unseasonably heavy rainfall during early December hampered final wheat harvests and waterlogged soils on primary vineyard lands.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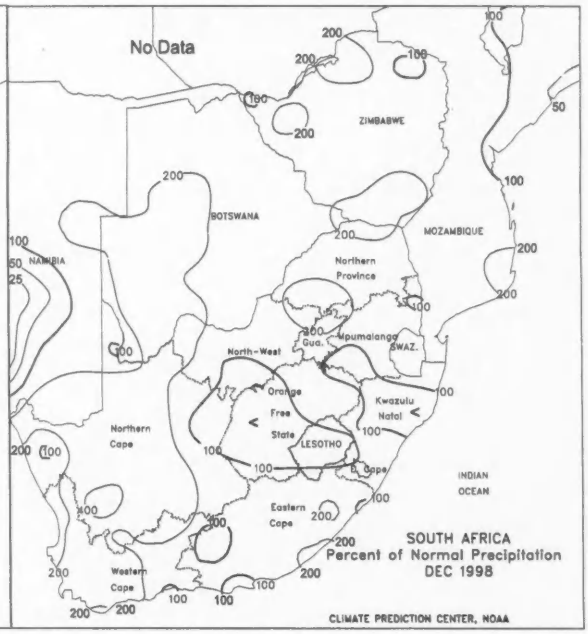
ZIMBABWE
BOTSWANA
MOZAMBIQUE
NAMIBIA
Northern Province
North-West
Gau.
Mpumalanga
SWAZ.
Orange Free State
Kwazulu Natal
LESOTHO
Northern Cape
Eastern Cape
Western Cape
INDIAN OCEAN
SOUTH AFRICA
Total Precipitation (mm)
DEC 1998
CLIMATE PREDICTION CENTER, NOAA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ZIMBABWE
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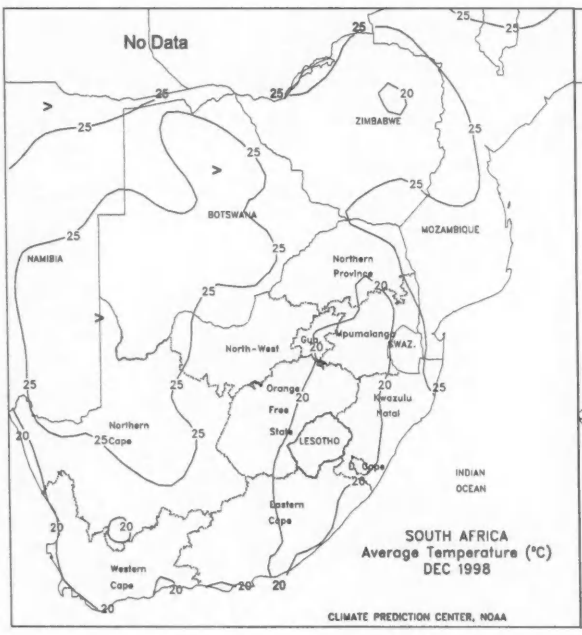
MOZAMBIQUE
NAMIBIA
Northern Province
North-West
Gau.
Mpumalanga
SWAZ.
Orange Free State
Kwazulu Natal
LESOTHO
Northern Cape
Eastern Cape
Western Cape
INDIAN OCEAN
SOUTH AFRICA
Percent of Normal Precipitation
DEC 1998
CLIMATE PREDICTION CENTER, NOAA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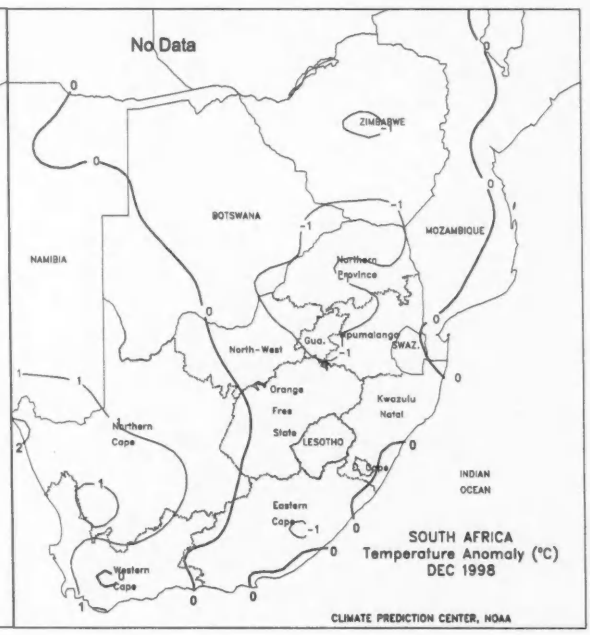
MOZAMBIQUE
NAMIBIA
Northern Province
North-West
Gau.
Mpumalanga
SWAZ.
Orange Free State
Kwazulu Natal
LESOTHO
Northern Cape
Eastern Cape
Western Cape
INDIAN OCEAN
SOUTH AFRICA
Average Temperature (°C)
DEC 1998
CLIMATE PREDICTION CENTER, NOAA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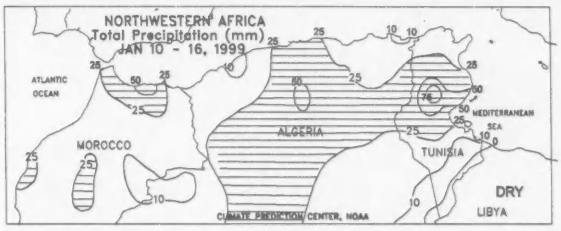
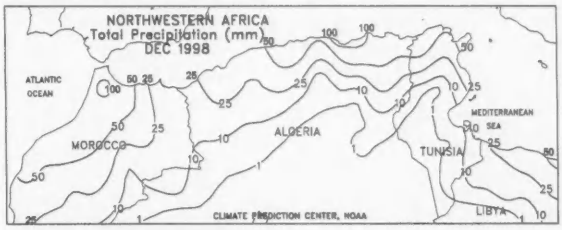
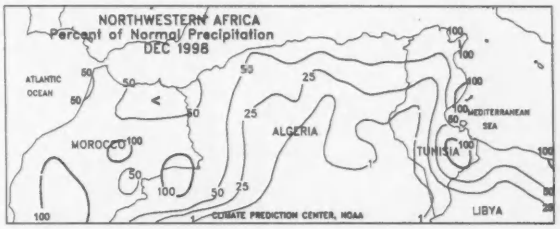
MOZAMBIQUE
NAMIBIA
Northern Province
North-West
Gau.
Mpumalanga
SWAZ.
Orange Free State
Kwazulu Natal
LESOTHO
Northern Cape
Eastern Cape
Western Cape
INDIAN OCEAN
SOUTH AFRICA
Temperature Anomaly (°C)
DEC 1998
CLIMATE PREDICTION CENTER, NOAA

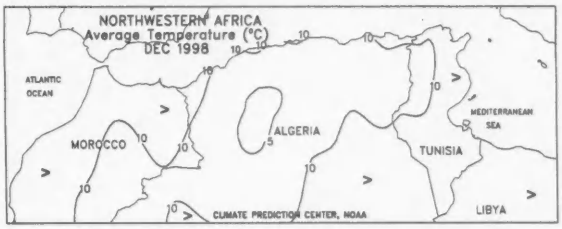


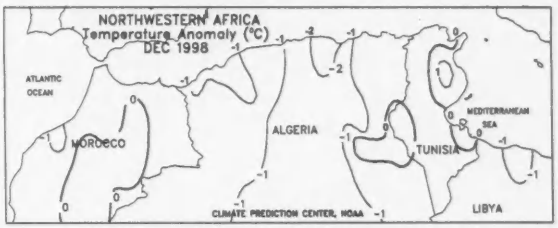
NORTHWESTERN AFRICA

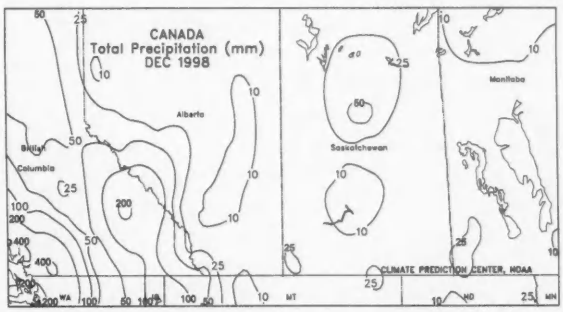
Widespread light to moderate precipitation (10-40 mm, with local amounts in excess of 40 mm) fell over winter grain areas in Morocco, Algeria, and Tunisia, improving moisture conditions for winter grains in the vegetative stage. The precipitation (20-40 mm) that fell in southern growing areas in Morocco, Algeria, and Tunisia was especially welcomed, reversing a drying trend since December. Weekly temperatures averaged 1 to 3 degrees C above normal in Algeria and Tunisia, and 1 to 2 degrees C below normal in Morocco. In December, the first substantial rains of the growing season fell on winter grain areas in Morocco, prompting widespread planting slowed by the previous dryness. Winter grain areas received additional moisture at month's end, improving prospects for winter grain emergence and establishment. Farther east, below-normal precipitation fell over winter grain areas in Algeria and Tunisia in December, with southernmost areas receiving less than 50 percent of normal rainfall. While the dryness in these areas favored late planting activities, it reduced moisture for crop emergence and establishment. While this past week's precipitation throughout the region improved growing conditions for winter grains, soil moisture reserves remained limited. As a result, timely rains will be required during the remainder of the growing season to prevent serious declines in crop prospects.

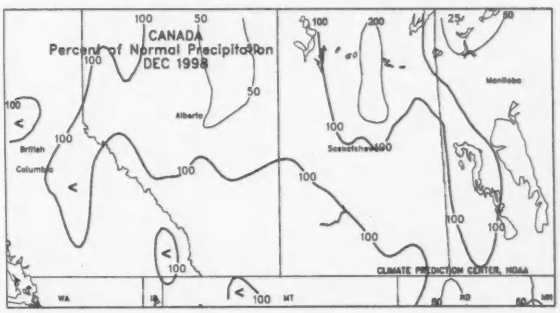


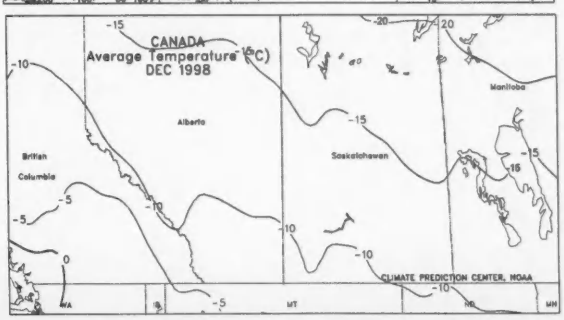


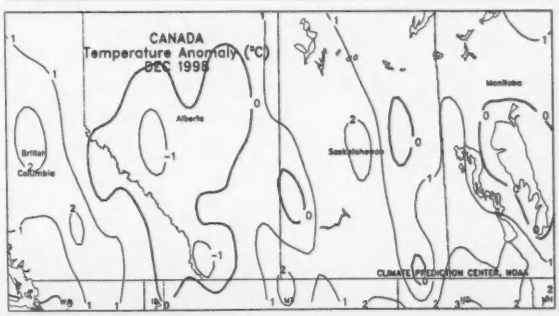


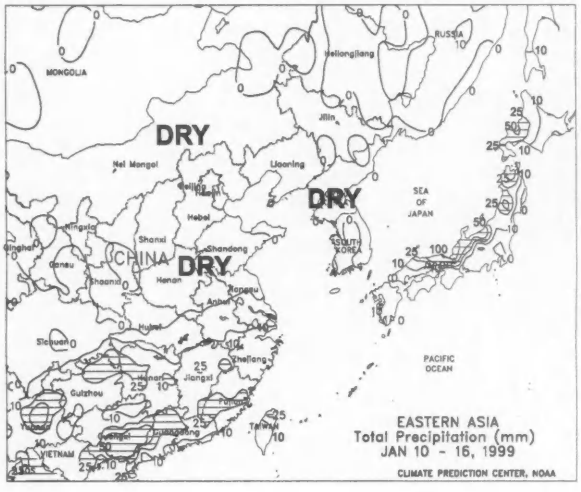






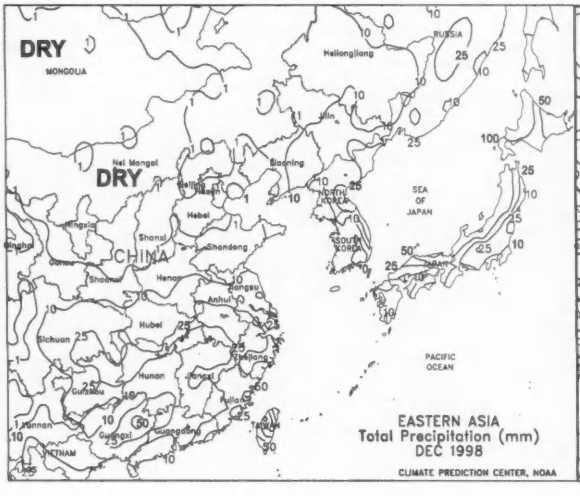


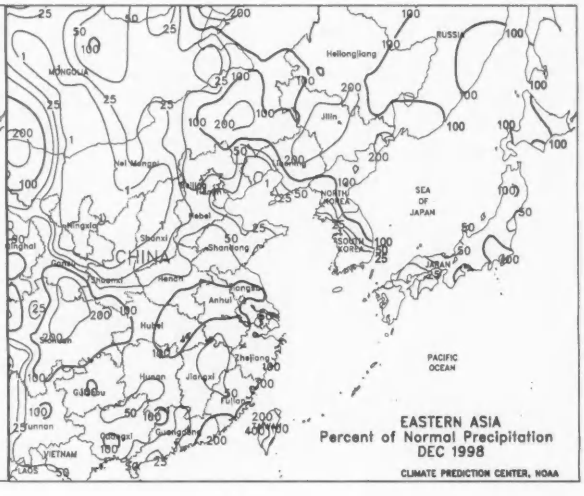


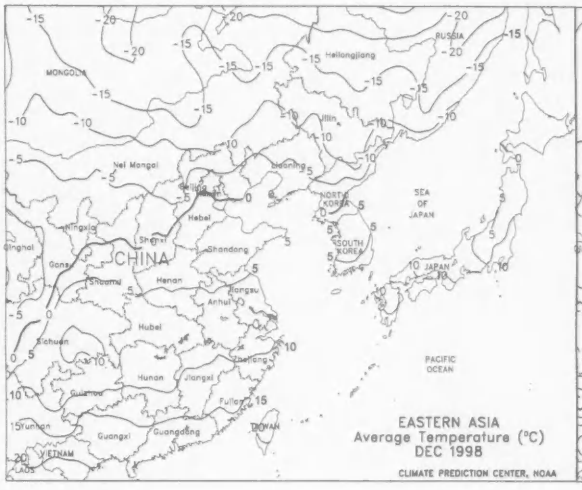


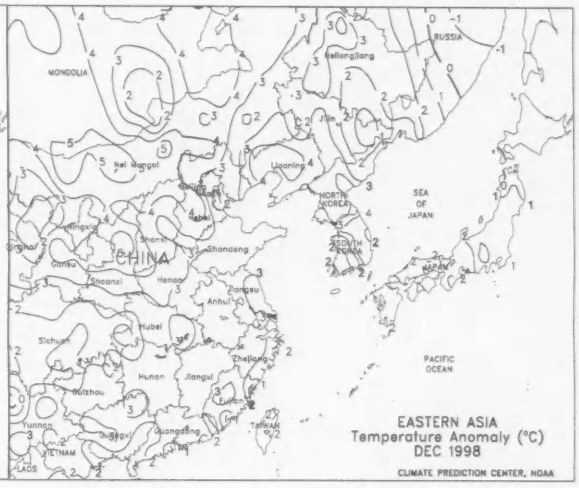
EASTERN ASIA

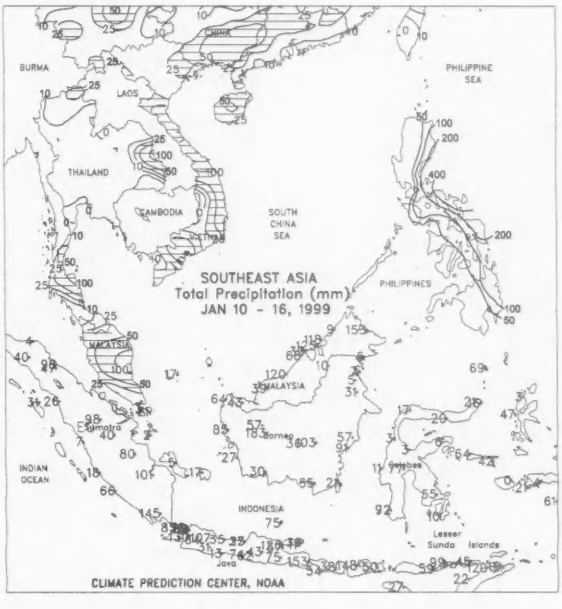
Seasonably cold weather (minimum temperatures ranged from -7 to -11 degrees C) kept winter wheat dormant across the North China Plain. Across southern China and the southern Yangtze Valley, rain (10-35 mm) benefited winter grains and oilseeds. Temperatures averaged near normal across the North China Plain and 2 to 4 degrees C below normal across southern China. During December, mostly dry weather continued the below-normal precipitation trend since autumn in the North China Plain. Adequate irrigation supplies, however, existed for irrigated winter wheat. Winter wheat remained dormant across most of the region, despite above-normal December temperatures. Near- to above-normal precipitation favored vegetative winter grains and oilseeds across the lower Yangtze Valley.





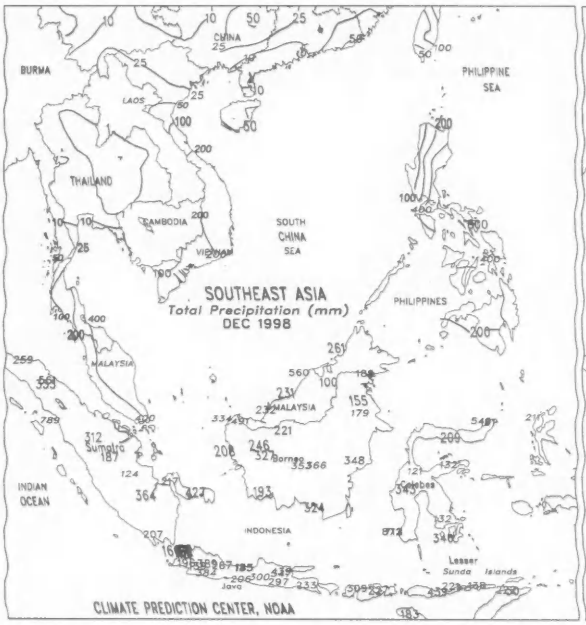


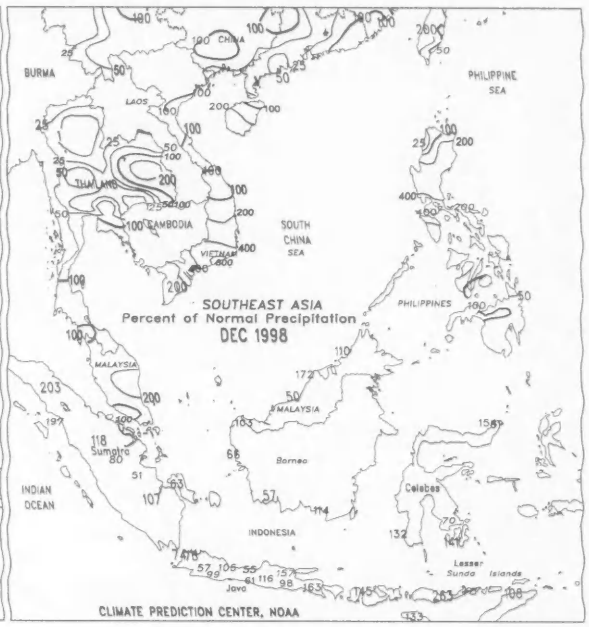


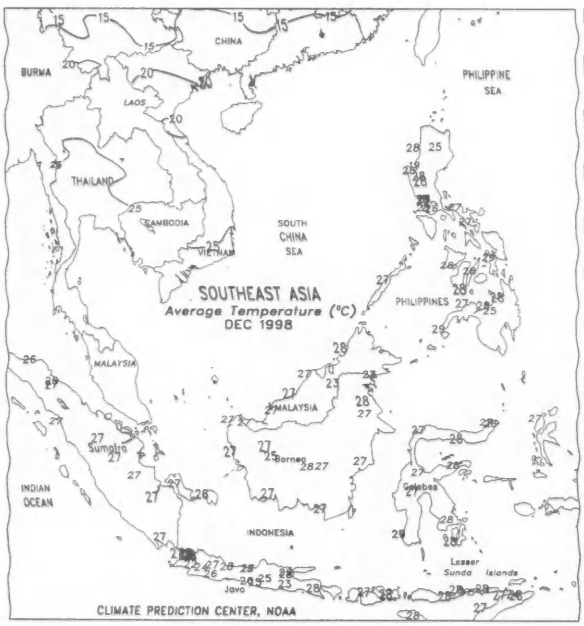


SOUTHEAST ASIA

In the Philippines, torrential showers (100-600 mm) caused flooding and possible crop damage to second-crop grains and tropical crops in southeastern Luzon and the east-central islands. Elsewhere across the Philippines, showers (10-40 mm) maintained moisture supplies for second-crop grains. Unseasonably heavy rain (60-150 mm) slowed winter-spring rice transplanting in central and southern Vietnam. Seasonably dry weather prevailed across Thailand, favoring rice fieldwork. Showers (40-100 mm) maintained moisture supplies for main-season rice in Java and oil palm across peninsular Malaysia. An active monsoon pattern during December produced above-normal rainfall and flooding across the Philippines, Vietnam, and peninsular Malaysia. Seasonably dry weather aided rice fieldwork in Thailand. Near- to above-normal December rainfall maintained adequate moisture for main-season grains in Java.


SOUTHEAST ASIA
Total Precipitation (mm)
DEC 1998
CLIMATE PREDICTION CENTER, NOAA
BURMA
CHINA
PHILIPPINE SEA
LAOS
THAILAND
CAMBODIA
SOUTH CHINA SEA
VIETNAM
PHILIPPINES
MALAYSIA
Sumatra
Borneo
Celebes
INDIAN OCEAN
INDONESIA
Java
Lesser Sunda Islands


SOUTHEAST ASIA
Percent of Normal Precipitation
DEC 1998
CLIMATE PREDICTION CENTER, NOAA
BURMA
CHINA
PHILIPPINE SEA
LAOS
THAILAND
CAMBODIA
SOUTH CHINA SEA
VIETNAM
PHILIPPINES
MALAYSIA
Sumatra
Borneo
Celebes
INDIAN OCEAN
INDONESIA
Java
Lesser Sunda Islands


SOUTHEAST ASIA
Average Temperature (°C)
DEC 1998
CLIMATE PREDICTION CENTER, NOAA
BURMA
CHINA
PHILIPPINE SEA
LAOS
THAILAND
CAMBODIA
SOUTH CHINA SEA
VIETNAM
PHILIPPINES
MALAYSIA
Sumatra
Borneo
Celebes
INDIAN OCEAN
INDONESIA
Java
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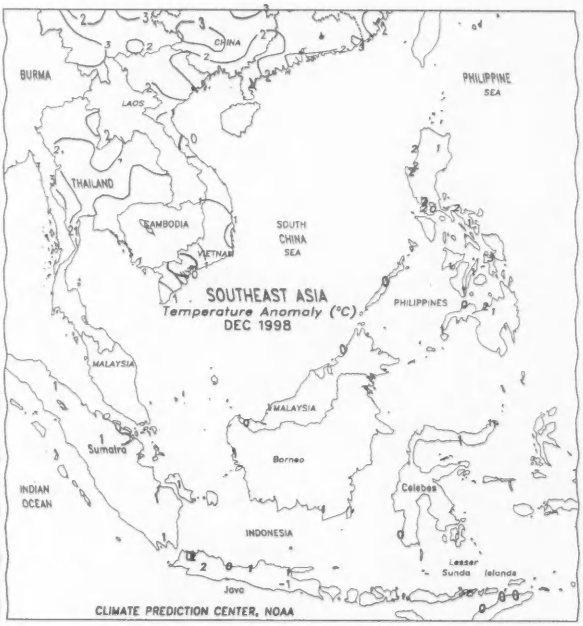
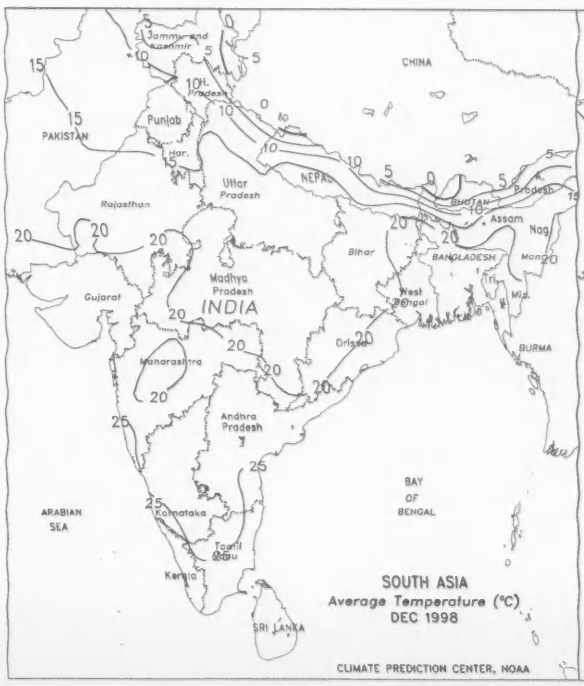
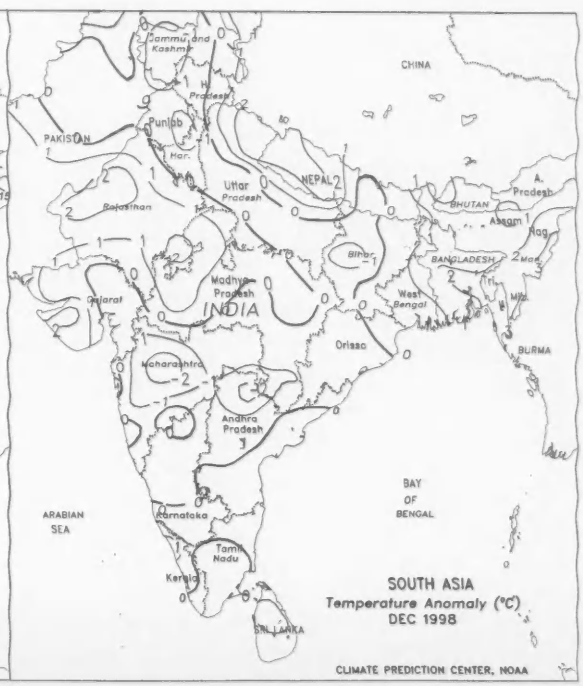
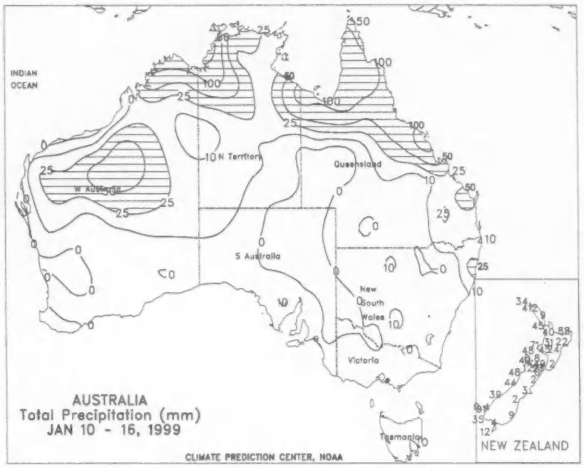

SOUTHEAST ASIA
Temperature Anomaly (°C)
DEC 1998
CLIMATE PREDICTION CENTER, NOAA
BURMA
CHINA
PHILIPPINE SEA
LAOS
THAILAND
CAMBODIA
SOUTH CHINA SEA
VIETNAM
PHILIPPINES
MALAYSIA
Sumatra
Borneo
Celebes
INDIAN OCEAN
INDONESIA
Java
Lesser Sunda Islands

SOUTH ASIA

In December, seasonably dry weather aided dry down and harvesting of summer grains, oilseeds, and cotton, and promoted the planting of winter grains and oilseeds. The exception was in the southern tip of India, where locally heavy rainfall likely flooded some coastal rice areas. Temperatures for the month were variable but generally seasonable.

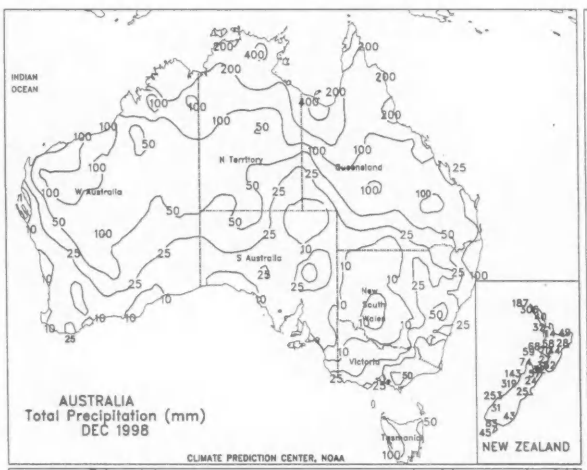


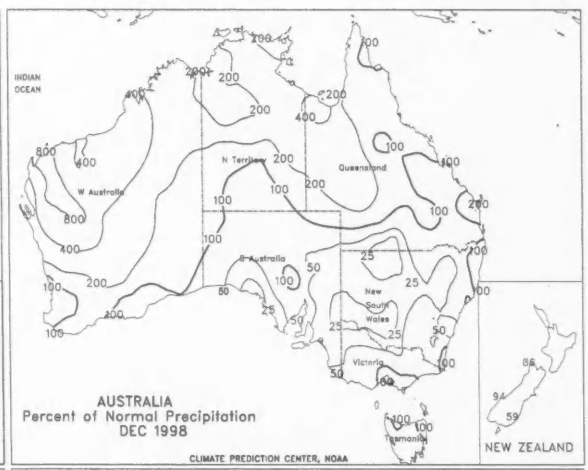


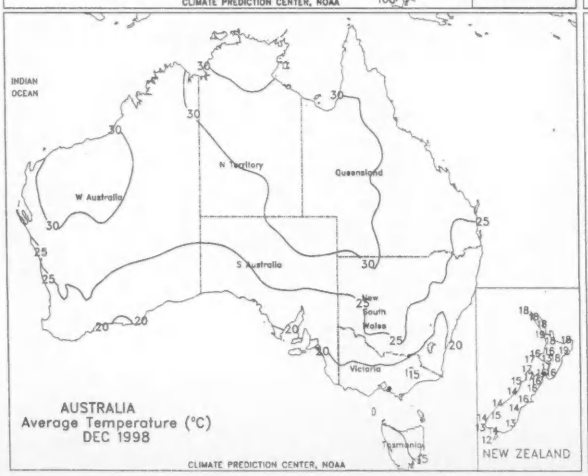


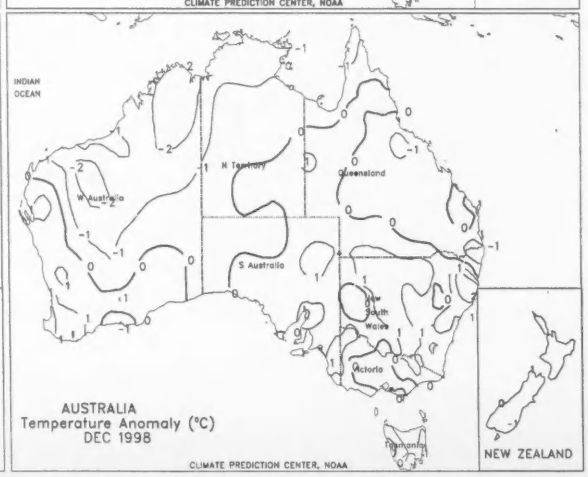
AUSTRALIA

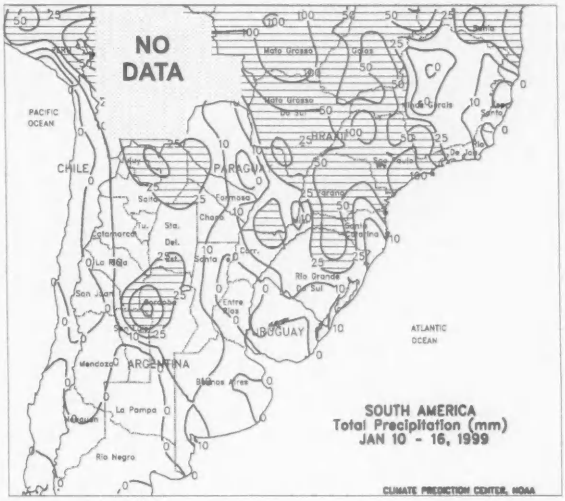
The current drying trend over the summer crop regions of New South Wales favored cotton and sorghum development. Farther north, rain (10-25 mm or more) continued over southern Queensland. However, heavy rain (50 mm or greater) in the coastal sugarcane areas was confined to the northern half of the region. Elsewhere, drier weather returned to western and southeastern agricultural districts, and unseasonable heat continued to stress pastures and livestock from western Queensland southward. In New Zealand, dryness dominated the main pasture areas for much of the week, with weekend showers (10-35 mm or more) bringing some relief to central sections of North Island. During December, near- to above-normal rainfall kept Queensland's cotton and sorghum well watered, although periods of favorable dryness aided crop development. To the south, dry pockets have developed over sections of New South Wales, but long-term moisture reserves for summer crops were likely favorable. Below-normal December rainfall in the southeast favored winter grain dry down and harvesting, while in Western Australia, scattered showers may have disrupted harvesting in northern growing areas.





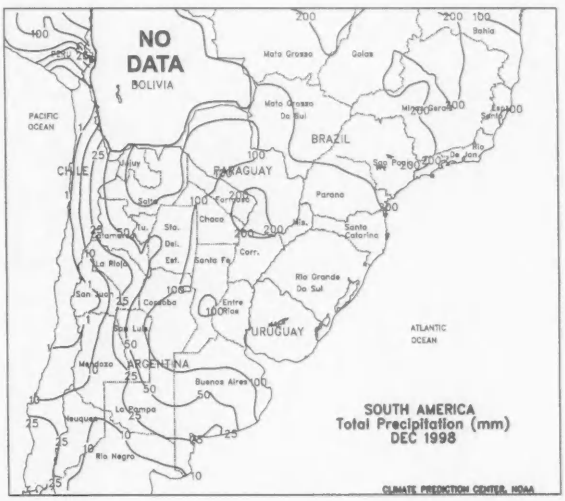






SOUTH AMERICA

In southern Brazil, timely rain (15-60 mm) benefited soybeans in Rio Grande do Sul and eased short-term dryness. Consistent rainfall, however, will be needed to ensure adequate soybean crop prospects. Elsewhere in southern Brazil, widespread showers (40-110 mm) maintained adequate to abundant soil moisture for soybeans. Temperatures averaged near to slightly below normal across Rio Grande do Sul and slightly above normal elsewhere in southern Brazil. In central Argentina, light to moderate rain (10-30 mm) aided reproductive corn and vegetative soybeans across most crop areas. However, lighter rain (less than 10 mm) fell across central Buenos Aires, decreasing available soil moisture. Temperatures averaged 2 to 4 degrees C below normal across the region, reducing crop water use across the region. Light rain (less than 10 mm) covered the northern cotton areas. Showers (10-40 mm) benefited cotton and soybeans in southern Paraguay. Timely mid- to late-December rainfall maintained average yield prospects for corn and soybeans in east-central Argentina. Below-normal rainfall in southern Buenos Aires favored wheat maturation and harvesting but stressed vegetative corn. Slightly below-normal rainfall caused some stress to soybeans in Rio Grande do Sul and Parana, Brazil. Elsewhere in southern Brazil, near-normal rainfall maintained adequate soil moisture for soybean development.



The *Weekly Weather and Crop Bulletin* (ISSN 0043-1974) is published weekly and jointly prepared by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) and the U.S. Department of Agriculture (USDA). Publication began in 1872 as the *Weekly Weather Chronicle*. It is issued under general authority of the Act of January 12, 1895 (44-USC 213), 53rd Congress, 3rd Session. NOAA is responsible for managing, printing, and distributing the bulletin. The contents may be reprinted freely, with proper credit.

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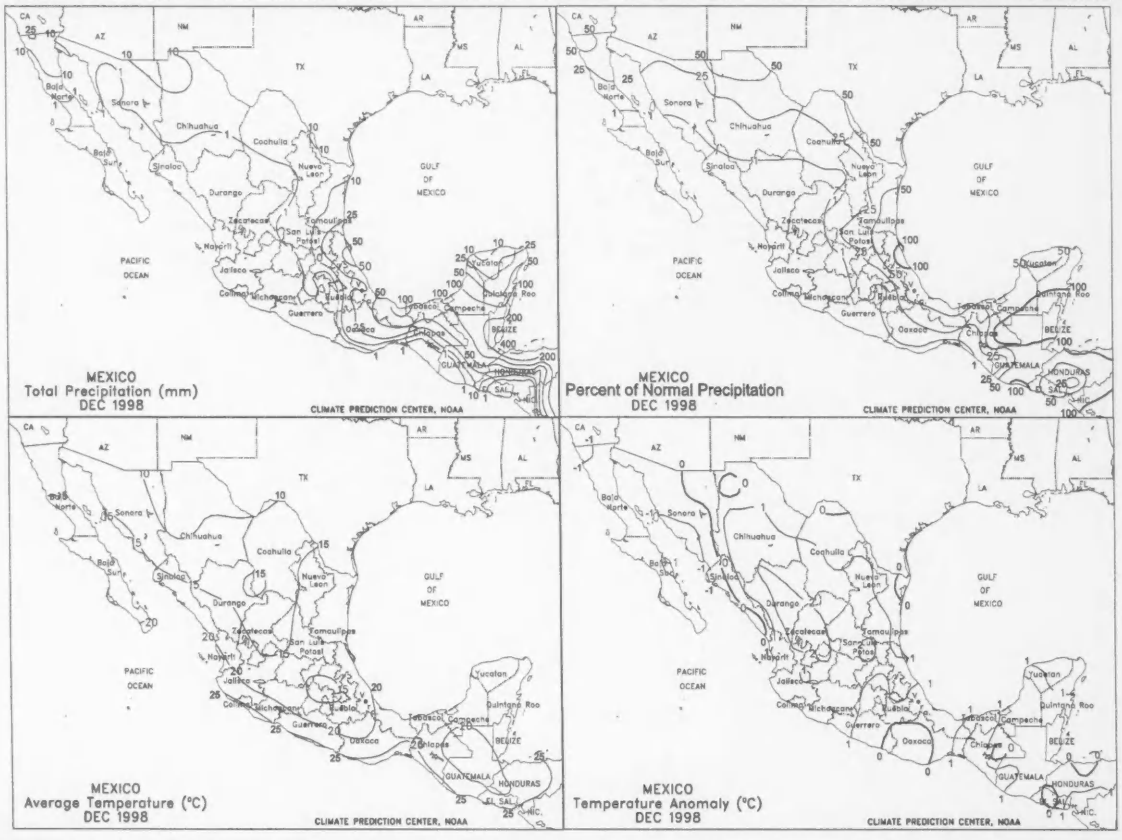

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